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ABSTRACT

This publication is a compilation of materials that form the South Dakota Integration Training Model. Section 1 contains materials related to career information, including transparency masters/handouts with information on workplace trends, job skills, growth occupations, earnings, and nontraditional careers. Section 2, on integration basics, provides informative material and transparency masters/handouts on rationale, benefits, barriers, and design options. Section 3 contains material on, and forms for, curriculum alignment. Section 4 consists of information and transparency masters/handouts on project themes, concepts, project goals/rationale, and essential questions. Section 5, on standards, covers examples of employability-related student activities and ideas for integrating employability competencies into academic courses. Section 6, on instructional strategies, includes information on engaging instructional strategies, multiple intelligences, and assessing how students learn. Section 7, on assessment, contains: a definition of assessment; Bloom's taxonomy; comparison of typical and "authentic" tests; framework of assessment approaches and methods; multiple intelligences assessment menu; and materials for development and use of rubrics. Section 8 provides an agenda and all required materials for a two-day training session on integrated teaching and learning. Section 9 contains project examples. Section 10 is a glossary. (YLB)

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ED 439 231

Putting the Pieces Together

South Dakota Integration Training Model

4th Edition

Division of Workforce and Career Preparation

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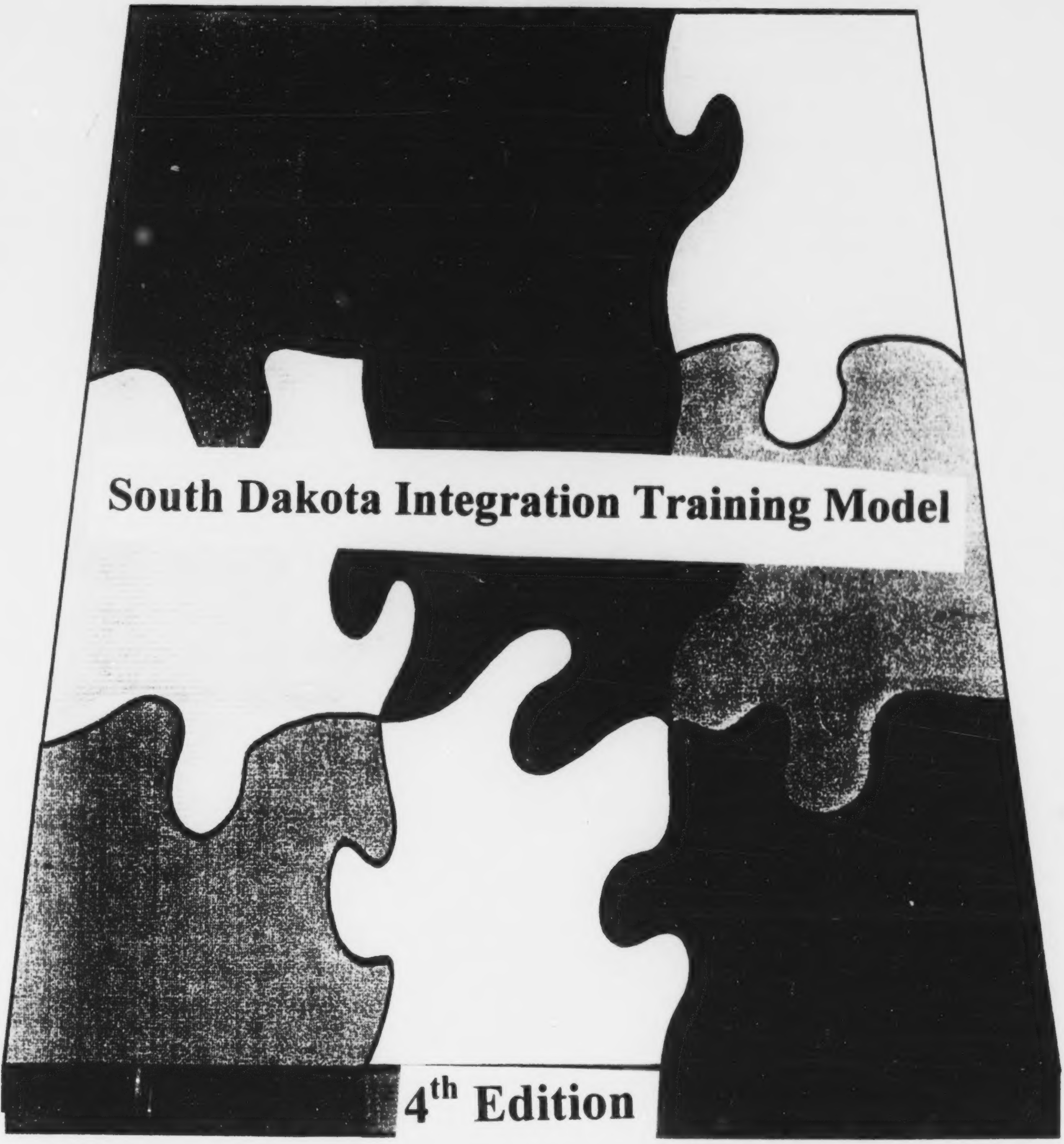
Putting the Pieces Together



South Dakota Integration Training Model

4th Edition

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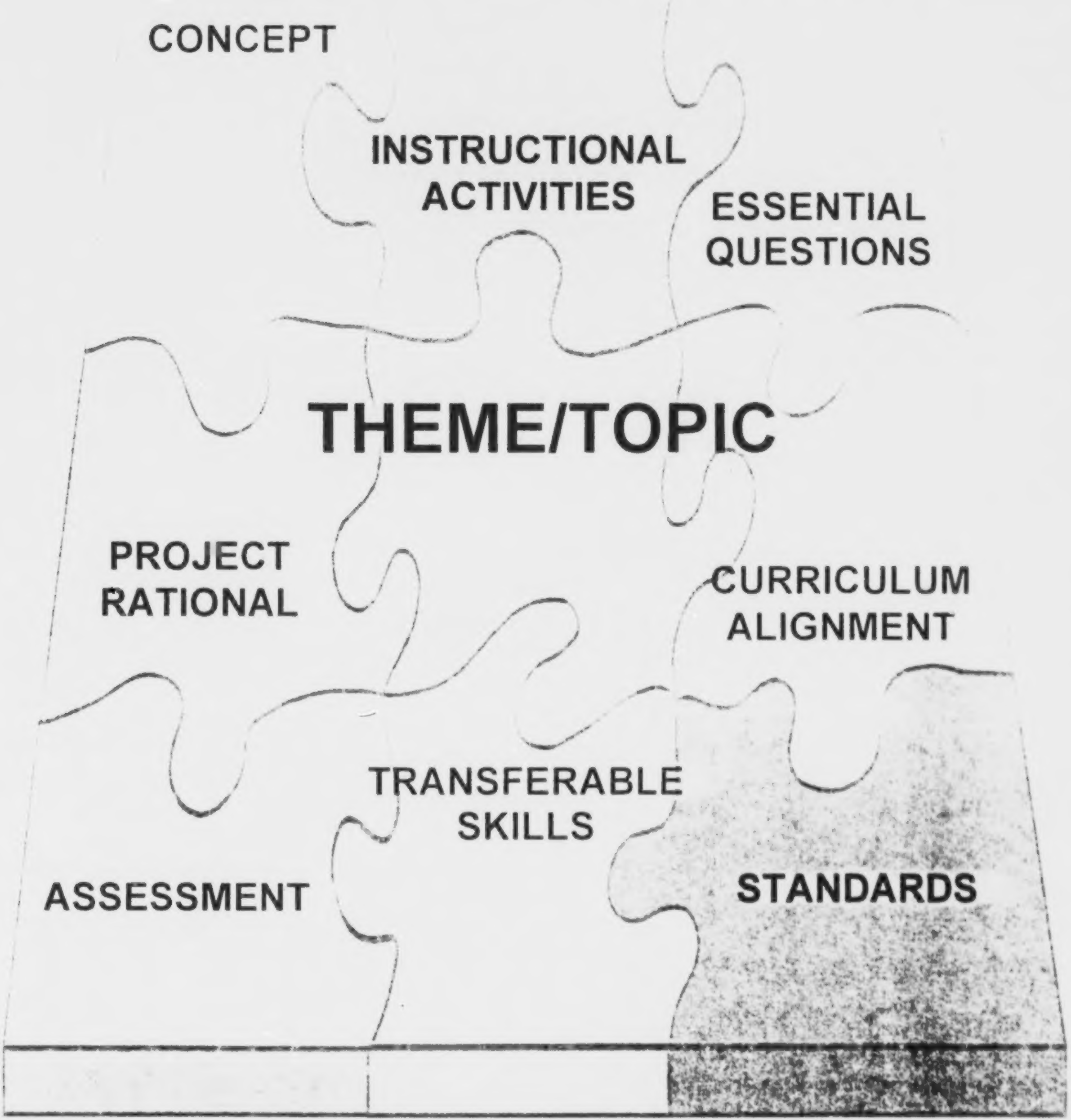

CONCEPT

INSTRUCTIONAL ACTIVITIES

ESSENTIAL QUESTIONS

THEME/TOPIC

PROJECT RATIONAL

CURRICULUM ALIGNMENT

TRANSFERABLE SKILLS

ASSESSMENT

STANDARDS

INTEGRATION OF ACADEMIC AND VOCATIONAL TECHNICAL EDUCATION

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THE CLASSROOM OF THE FUTURE

Integration Basics

- THE CLASSROOM OF THE FUTURE IS ONE THAT INTEGRATES ACADEMIC AND TECHNICAL KNOWLEDGE AND SKILLS

WHAT IS INTEGRATION

WHAT IS INTEGRATION?

WHAT ARE THE BENEFITS OF INTEGRATION?

WHAT ARE BARRIERS TO INTEGRATION?

WHAT CONDITIONS NEED TO EXIST BEFORE INTEGRATION CAN OCCUR?

WHAT ARE SOME INTEGRATION MODELS? PROS? CONS?

Career Information

CAREER INFORMATION

You'd be Surprised!

Test Yourself

Do You Know the ABCs of Higher Education?

1. What percentage of high school graduates actually earn a Bachelor's degree?_______
2. What percentage of college students are enrolled in remedial classes?______________
3. In the past 15 years, the cost of living has increased by 88 percent. By what percentage has the cost of college increased?____________

What's Your Career IQ?

4. What types of jobs will show the greatest growth through the year 2010?_______
5. In the past 30 years, professional jobs have increased by what percentage?__________
6. Through 2010, what percentage of jobs will require at least two years of education or training beyond high school?__________
7. Through 2010, what percentage of jobs will require a Bachelor's degree?_________
8. What percentage of recent college graduates with a Bachelor's degree are settling for jobs that do not require one?___________

Answers

1. 23%
2. 40-70%
3. 260%
4. paraprofessional/technical
5. 0%
6. 80%
7. 20%
8. 25%

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DID YOU KNOW...

- The majority of students entering higher education institutions have no career plans.
- The majority of students starting a college education drop out within two years due to no plan of direction.
- 20% of university bound complete a baccalaureate program.
- 85% of postsecondary bound complete a technical program.

S.D. Education Statistical Digest

The Changing Workforce

- Our future depends upon a highly skilled workforce.
- Technology has increased the skill levels required for workers.
- Agriculture has moved from the plow and the mule to genetically altering foods using biotechnology.
- Manufacturing has moved from assembly line workers to robots and technicians who maintain them.
- Information processing has moved from manual typewriters and keypunch to voice-to print technology and Personal Data Assistants (PDA).
- Employment has shifted from manufacturing to service.

Future Trends

60% of high school students will work in jobs that currently do not exist.

90% of all jobs in the year 2005 will require knowledge of a computer.

85% of future jobs will require skill training beyond high school.

65% of future jobs will require some college but less than a 4-year degree.

Future Trends

The average adult changes jobs 7 times and changes careers 3 times over his or her work life.

The new workforce will work predominantly in small companies. (25 employees of less)

The workforce will be predominantly female, older, and culturally diverse.

Some Workplace Trends

	☐ Individual achievement is being replaced by team focus. Strong interpersonal skills will become a condition of employment.
	☐ Large corporations are becoming leaner and flatter. There is an increase in employment in small companies. Career paths are changing. Downsizing is a way of life. Outplacement is a real possibility.
SOME WORKPLACE TRENDS	☐ Continuous lifelong learning will be essential. Companies will provide professional development opportunities and learning assignments in place of job security.
	☐ The focus will be on psychological success versus upward mobility. There are few one-job, one-employer careers. Employees are increasingly expected to manage their own careers.
	☐ Employees must know and be able to communicate their skills, values, interests, etc. People who take risks and think creatively will be valued and rewarded.
	☐ We are moving toward a more diverse workforce. New hires are entering a global economy.
	☐ To stay competitive, organizations will continuously recreate themselves. These "self-designing" organizations require employees who can continuously adapt and grow. No organization is exempt.
	☐ The world is becoming increasingly technology and computer dependent. Fifty-five percent of U.S. corporation capital investments are related to information technology. Technological improvements will replace unskilled labor.
	☐ Wage gaps will grow larger between occupational and educational levels. Highly skilled workers will be required in all industries.

Adapted from Montross and Shinkman, 1996

CHARACTERISTICS OF TODAY'S AND TOMORROW'S WORKPLACE

TRADITIONAL MODEL	HIGH PERFORMANCE MODEL
STRATEGY	
mass production	flexible production
long production runs	customized production
centralized control	decentralized control
PRODUCTION	
fixed automation	flexible automation
end-of-line quality control	on-line quality control
fragmentation of tasks	work teams, multi-skilled workers
authority vested in supervisor	authority delegated to worker
HIRING AND HUMAN RESOURCES	
labor-management confrontation	labor-management cooperation
minimal qualifications accepted	screening for basic skills abilities
workers as a cost	workforce as an investment
JOB LADDERS	
internal labor market	limited internal labor market
advancement by seniority	advancement by certified skills
TRAINING	
minimal for production workers	training sessions for everyone
specialized for craft workers	broader skills sought

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NEW BASIC SKILLS OF THE FUTURE

"The new basics do not mean throwing out all the skills being taught in school. It simply means looking at them in a different fashion. It's how you can relate academic instruction to the workplace." *Dr. Richard D. Jones*

The basic skills of the future are designed to apply knowledge to real life settings, thus reinforcing the learning process and increasing the desire for students to learn, while challenging them at the same time.

Creative Thinking

The ability to make random connections between existing information to generate new information. It is through creative thinking that social, community, and work-related problems are solved.

Adaptation and Constant Improvement

Businesses are looking for employees who seek to improve themselves, their organizations, and their communities. Such employees are self-motivated and looking for new methods of bettering the workplace.

Speaking and Listening

Schools need to find new ways to include speaking and listening skills, and to give students feedback as to how well they are doing. It is the ability to speak and listen well that makes an important difference in the workplace.

Computer Applications

Computers are becoming common workplace tools. An essential skill is to apply these tools to increase productivity and enhance communication. Merely operating or programming a computer is of little use unless it is applied to a work task.

Reasoning and Problem-Solving

The ability to discover how and why variables relate to each other, and then apply what has been learned to new situations and problems.

Inquiry and Technology

Inquiry is the capacity to observe, pose questions, develop hypotheses, and collect relevant data. Technology is the capacity to appropriately use modern technological tools, and to design solutions to human problems and needs.

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Job Skill Level Changes

JOB SKILL LEVEL CHANGES

YEAR	SKILLED	UNSKILLED	PROFESSIONAL
1950	20%	60%	20%
1991	45%	35%	20%
2005	65%	15%	20%

SOURCE: US BUREAU OF LABOR STATISTICS

Unskilled:	High School or less with no technical training
Skilled:	Post-secondary training, but less than a baccalaureate degree. Includes associate degrees, vocational-technical schools, apprenticeship training, and military.
Professional:	Baccalaureate degree or more

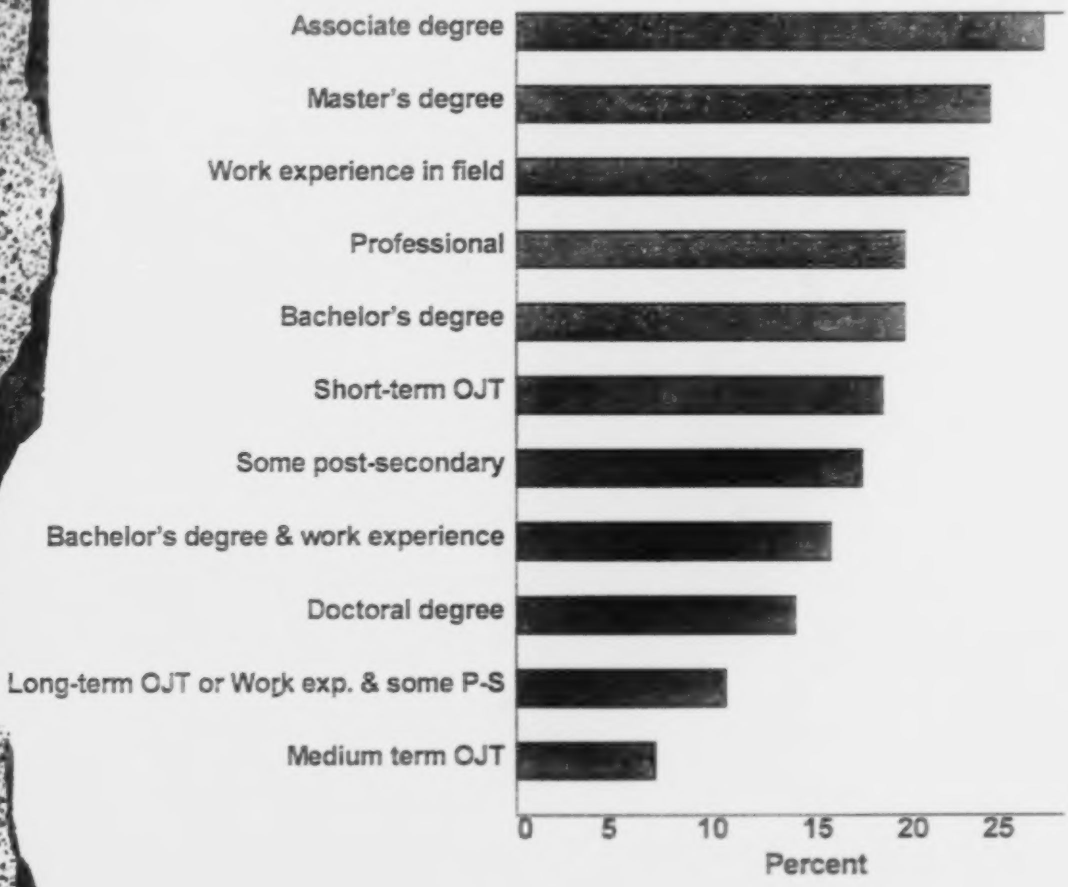
SD Occupations Growing Most Rapidly

SD Occupations Growing Most Rapidly

	1994 Workers	2005 Workers	% Growth
Desk-Top Publishing System Operators	200	415	107.5%
Human Services Workers	665	1,205	81.2%
Systems Analysts	430	760	76.7%
Occupational Therapist	160	270	68.8%
Surgical Technicians	255	425	66.7%
Medical Assistants	395	650	64.6%
Personal & Home Care Aides	415	680	63.9%
Clerks, Hotel Desk	995	1,590	59.8%
Paralegals	170	270	58.8%
Counselors, Residential	1,245	1,960	57.4%
Physical Therapists	290	450	55.2%
Clerks, Adjustment	2,110	3,270	55.0%
Medical Records Technicians	380	585	53.9%
Assemblers, Machine	315	480	52.4%
Bill & Account Collectors	1,155	1,745	51.1%

SOURCE: South Dakota Labor Bulletin

South Dakota
Projected Percentage Growth in Employment by Level of Education and Training
1994-2005



SOURCE: Labor Market Information Center, SD Department of Labor

Earnings: How Do They Vary by Occupation?

Each year the US Bureau of Labor Statistics estimates the average salary in various occupations. Here are the figures from the latest *Occupational Outlook Handbook* for selected fields. In some cases, such as physicians, the figure may be lower than normally quoted as averages include those just getting started in the field as well as established workers. Salaries are higher in metropolitan areas than in smaller communities.

Office Related

File Clerk	$15,500
Secretary	$19,150
Telephone operator	$19,600
Credit clerk	$20,800
Office machine repairer	$22,900
Office supervisor	$26,520

Craft Related

Sewing machine operator.	$15,800
Butcher	$16,450
Construction labor	$16,900
Painter	$18,800
Carpenter	$21,200
Auto mechanic	$22,000
Bricklayer	$24,000
Machinist	$25,950
Electrician	$27,500
Tool and die maker	$32,100
Plumber	$37,500
Iron worker	$54,000

Retail and Hospitality

Cashier	$11,400
Waiter/waitress	$12,800
Apparel sales	$13,250
Cosmetologist	$14,250
Hotel clerk	$14,300
Janitor/cleaner	$14,650
Buyer	$25,450
Jeweler	$28,000

Service and Public

Social worker	$25,450
Clergy member	$26,800
Telephone operator	$27,500
Police officer	$29,100
Librarian	$29,900
Fire fighter	$31,800
Mail carrier	$32,250
Postal clerk	$34,000
Public administrator	$35,650

Health Related

Clinical lab technician	$25,950
Dietician	$26,850
Nurse, RN	$34,100
Occupational therapist	$35,600
Physician assistant	$41,000
Pharmacist	$45,000
Veterinarian	$83,069
Physician	$139,000

Technical Fields

Engineering technician	$28,800
Architect	$35,100
Biological scientist	$36,050
Computer programmer	$36,900
Chemist (BS)	$42,000
Computer analyst	$42,300
Actuary	$46,000
Operations research analyst	$50,000
Chemical engineer	$51,200
Engineer	$52,500
Chemist (PhD)	$60,000

Transportation

Cab driver	$18,700
Bus driver	$20,000
Truck driver	$23,350
Airline pilot	$55,650
Railroad engineer	$59,600

Other Business Related

Bank teller	$14,750
Insurance adjuster	$22,800
Real estate sales	$29,650
Insurance broker	$30,100
Accountant	$30,800
Personnel manager	$33,800
Securities broker	$40,300
Marketing manager	$42,550
Economist	$44,450

Education Related

Child care workers	$7,900
Elementary school teacher	$31,200
High school teacher	$33,000
College professor	$46,300
High school principal	$63,000

Other Professional

Newspaper reporter	$20,300
Photographer	$21,200
Artist	$24,550
Travel agent	$25,000
Reporter/editor	$30,700
Public relations worker	$32,000
Lawyer	$55,800

Data is based upon weekly wage averages times 50 weeks.

Source: NYS Occupational Education Equity Center

NONTRADITIONAL CAREERS FOR WOMEN

	Salaries	**Training Programs**
Construction Laborers	$11.02 - $20.20/hour	None required
Mechanics and Repair	$14,000 - $42,000	2 year programs; apprenticeships
Electronic Technician	$22,524 - $29,292	1 and 2 year programs
Computer Maintenance	$16,000 - $23,000	6 months - 2 years
Fire Fighters	$13,500 – 32,600	1 year program: apprenticeships
Water & Waste Tech.	$24,284 - $27,200	On-the-job and formal training
Robotics	$16,000 – 30,000	1,2 and 4 year programs
Carpentry	$8.00 - $20.00/hour	Apprenticeship programs
Welding	$16,000 - $25,000	1 & 2 year programs; apprenticeships
Tool and Diemaking	$22,256 - $31,772	1 & 2 year programs; apprenticeships
Machinist	$12.00 - $29.00/hour	1 & 2 year programs; apprenticeships
Machine Tool Operation	$14,924 – $25428	On-the-job; apprenticeships
Drafting/CAD	$18,000 - $29,000	3 months – 4 year programs
Small Engine Repair	$7.50 - $11.00/hour	3 months – 1 year training
Bricklayer	$8.00 - $21.00/hour	2 year programs; apprenticeships
Auto Body Repair	$20,956 - $27,900	1 & 2 year programs on the job training; apprenticeships
Aircraft Mechanics	$7.50 - $17.00/hour	Graduation from FAA School
Heating & Cooling System Mechanics	$8.00 - $18.00/hour	2 year programs; apprenticeships
Engineering	$30,526 - $39,000	Bachelor's Degree

Source: HORIZONS Occupational Information

NONTRADITIONAL CAREERS FOR MEN

	Salaries	Training Programs
Nursing (RN)	$25.605 - $34.300	2, 3 and 4 year programs
Certified Nurse Assistant	$16.968 -$21.504	3 months - 1 year programs
Travel Services Marketing	$12.000 - $21.000	1 and 2 year programs
Physical Therapy	$24.828 - $32.544	Variety of programs include class & clinical experience leading to BS
Child Care	$8.164 - $13.884	1 and 2 year programs
Legal Assistant	$18,924 - $29.652	Variety of programs
Librarian	$21.564 - $35.124	Master's required
Cosmetology (Hair Stylists)	$12.000 - $13,000	Nine months (1.500 hours)
Dental Assistant	$15.636 - $19.320	On-the-job or 9-15 months
Radiologic Technologist	$17,534 - $31.548	2,3, and 4 year programs
Surgical Technician	$15,000 - $23.000	9-24 months
Medical Lab Technician	$16.068 - $23.652	1 and 2 year programs
Medical Records	$19.668 - $25.044	1 and 2 year programs
Bookkeeping	$13.848 - $19,320	High School diploma
Court Reporting	$22.525 - $29.290	2 year programs
Secretary	$12.948 - $18,876	1 and 2 year programs
Elementary Teaching	$17.600 - $25,828	Bachelor's degree
Flight Attendants	$12.090 - $14.640	Company training programs

Source: HORIZONS Occupational Information

The Forces at Work in Today's Business Environment

No doubt about it. We live in a fast-paced, fast-changing world -- a world where emerging frontiers and realities are changing forever the world of "used-to-be's" that were the norm for workers in most organizations:

It used to be that we could plan our career path in our 20's, prepare for our promotions and accomplish these benchmarks pretty much on *our* schedule. Not anymore.

It used to be that if, in our 20's, we took a job with a company, we could eventually retire in our 60's from that same company. Not anymore.

It used to be that most top managers and supervisors were men with wives at home. Not anymore.

It used to be that each department operated separately with few overlappings. Not anymore.

It used to be that, if an employee was fired or let go, his manager didn't need to consider the possibility of being sued or shot by this person. Not anymore.

It used to be that we could control if and when we left one organization to join another. Not anymore.

It used to be that accepting a new job also meant an increase in pay. Not anymore.

And, it used to be that orders from the top managed the organization. Not anymore.

Any number of things ***used to be***. In fact, you can probably think of many others. Using the following activity sheet, take a moment to write a few "used-to-be's" that apply to your career, work experiences or observations in the workplace:

ACTIVITY
IT USED TO BE, BUT NOT ANYMORE

Complete the following sentences with experiences from your career and workplace or from your observations in your work environment:

It used to be that____ .
But not anymore.

It used to be that____ .
But not anymore.

It used to be that____ .
But not anymore.

These **"used-to-be's"** represent the diverse forces at work in today's ever-changing work environment. These forces impact your future and they certainly affect the way you communicate at work. Have you thought about forces such as:

☞ New technologies that require work skills you never imagined needing and are only beginning to learn?

☞ Fewer positions in departments, where one person must do the work of four?

☞ Changing markets that demand that workers acquire different skills to succeed in the job they've held for years?

☞ Company mergers that change the workplace culture and your career path options?

Reality Check Questions

- Where am I now?
- Where do I want to go?
- How am I going to get there?

(These 3 questions apply throughout your whole life)

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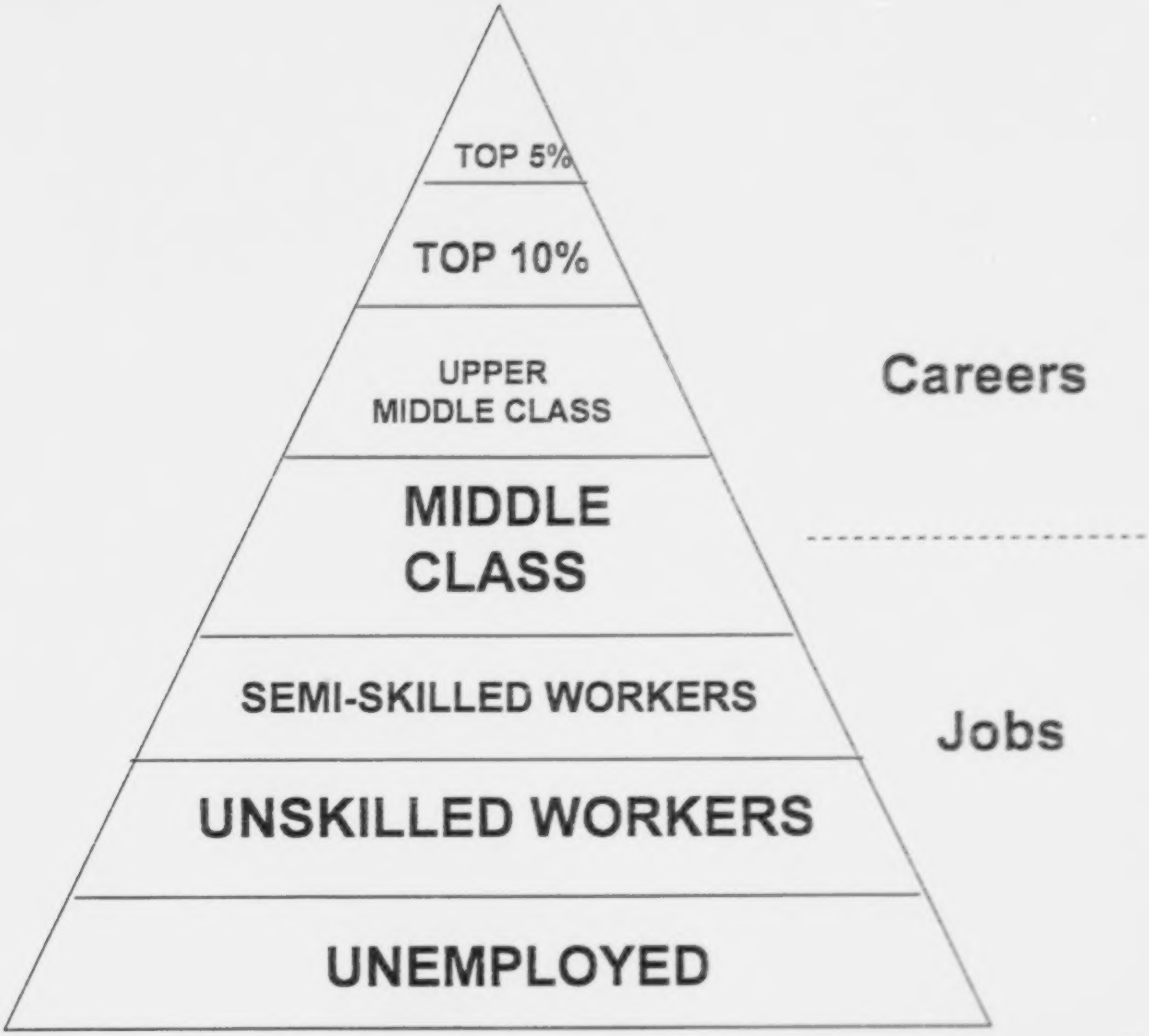
Where do students want to see themselves in 25 years?



TOP 5%

TOP 10%

UPPER
MIDDLE CLASS

MIDDLE
CLASS

SEMI-SKILLED WORKERS

UNSKILLED WORKERS

UNEMPLOYED

Careers

Jobs

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Integration Basics

INTEGRATION
BASICS

INTEGRATION

- A "BLENDING" OF HIGH LEVEL VOCATIONAL AND ACADEMIC CURRICULUM STANDARDS TO INCREASE RELEVANCY AND REINFORCE ACADEMIC COMPETENCIES

Integrated Vocational Technical and Academic Curriculum IS...

- Challenging, higher-level mathematics, science, language arts, and technical content and courses;
- Students required to apply information in rigorous assignments;
- Students involved in all phases from planning to evaluation;
- Students engaged in their learning;
- Teachers working and planning cooperatively;
- Learning activities reflect skills needed in today's workplace and have meaning to students;
- Assessment includes an application and demonstration of learning;
- Evaluation by teachers, employers, or other students;
- Teachers, students, and employers working together to make learning relevant;
- Career exploration and planning for a variety of careers within an occupational cluster;
- Options and choices for students - college, post-secondary technical, and/or employment;
- High expectations for all students; and
- Students leaving high school with plans for further education and/or employment, documentation of achievements and a high level of technical and academic skills.

Integrated Vocational Technical and Academic Curriculum IS NOT...

- Watered-down curriculum with low-level basics as content;
- Teachers directing all learning;
- Teachers lecturing and using textbooks as the only source of learning;
- Teachers and students working alone;
- Rote memorization by students;
- Students learning facts and procedures without knowing why;
- Assessment by paper and pencil tests only;
- Evaluation solely by teacher without including students and employers;
- Preparation for entry-level jobs. Students have no plans beyond their first job;
- Limited opportunities of student choices and input; and
- High expectations reserved only for college-bound students.

WHY INTEGRATE?

- ✶ To prevent fragmentation of curriculum
- ✶ To stimulate higher level, integrated thinking processes
- ✶ To view complex issues from a broader perspective
- ✶ To save time; curricular overload is a problem
- ✶ Integration is consistent with brain research and learning theory

BENEFITS OF INTEGRATION

- ⇨ Motivates students to learn by making the work interesting to them
- ⇨ Learning in context is more effective
- ⇨ Addresses employers' concerns about deficiencies in fundamental competencies, e.g. reading and communicating at appropriate level
- ⇨ Equips the students for changing requirements and escalating skill demands in the U.S. workplace
- ⇨ Provides students with the skills they need to function in a technological, information-based society
- ⇨ Helps schools to meet the standards that are in place worldwide
- ⇨ Builds bridges between content areas
- ⇨ Faculty collaboration is an antidote to the isolation of teaching
- ⇨ Broadens and expands teaching and assessment methods
- ⇨ Offers career information to students

STUDENT BENEFITS	EXPLANATION
Reduces curricular fragmentation	Facilitates curriculum connections
Provides depth to teaching and learning	Depth of thought and ideas, not depth of facts stacked higher
Provides teaching and learning focus	Teaching and learning are guided by the high-level generalizations arising from concepts and critical content.
Engages students in active learning	Students search for and construct knowledge using a variety of learning styles and modalities.
Challenges higher level thinking	The abstract concepts and generalizations force thinking to the analysis and synthesis levels.
Helps students connect knowledge	The best minds rise above the facts and see patterns and relationships.
Addresses significant problems, issues, and concepts	Teacher-designed units typically address critical issues of life and the world.
Forces an answer to the relevancy question, "Why study these facts?"	Facts are not ends but means to deeper understandings. (The unit design provides teacher and learner focus.)
Draws on multiple styles of learning	Auditory, visual, and kinesthetic activities are designed to engage many different modalities.

SOURCE: Arizona Department of Education

BARRIERS TO INTEGRATION

Integration Basics

INTEGRATION

- Historic split between academic and occupational programs
- Organizational structure of most schools (high schools, community colleges, and four-year institutions) reinforces the historic split
- Disciplinary specializations
- Multiple and evolving missions for education
- Lack of resources to support integration
- Absence of support from “top down” and “bottom up”

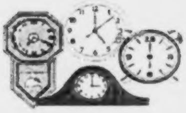
FINDING TIME TO PLAN

Purchased Time

Summer writing; vacation

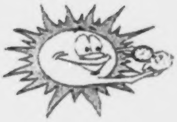
New Time

Teacher incentives: motivates use of own time



Tiered Time

Layer with existing functions such as lunch and breakfast meetings



Freed-Up Time

Parent volunteers, senior citizens, visiting artists, etc.; create time

Better-Used Time

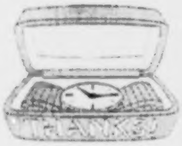
Rethink faculty and department meetings already on schedule - use memo, notes, or bulletins when possible

Borrowed Time

Add 15 minutes for 4 days, gain 1 hour on 5th day

Common Time

Schedule block time for teacher teams



Found Time

Serendipitous times that occasionally occur: student teacher, visiting dignitary, assembly, snow day

Rescheduled Time

Revise calendar year and/or daily timetable

Released Time

Inservice, institute, and professional development days

From *The Learner-Centered School*, p. 51-52. (Extrapolated from *Time for Reform* by Purnell and Hill.)

CONDITIONS THAT SUPPORT EFFECTIVE INTEGRATION

To overcome barriers in integrating academic and vocational studies, system and school leaders need to create certain conditions.

1: **Set higher expectations and get students to meet them.**
When you set higher expectations, you communicate the message that high school is important and that high performance counts for all students. Integration involves blending higher-level academic studies with challenging vocational instruction.

2: **Teach challenging vocational technical studies, including emphasis on the use of academic content in the workplace.**
Success in the modern workplace is based on the ability to apply academic and technical knowledge in communicating and in solving problems. Vocational technical teachers need to devise learning experiences that cause students to use language arts, algebra, geometry, statistics, and science knowledge and skills in performing tasks and in designing and making products.

3: **Drop low-level academic courses and prepare academic teachers to teach the essential concepts from the college preparatory curriculum to career-bound students.**
For integration to work, academic teachers need to make challenging assignments rather than rely on drill sheets and memory work. Schools need to offer academic courses that involve students as workers in writing research papers, producing quality products, preparing and making oral reports, presenting ideas and defending opinions, using mathematics to solve real-life problems, and presenting their findings in class. Teachers need to function as coaches, mentors, and facilitators rather than as sources of all knowledge.

4: **Require students to complete a challenging program of study consisting of an upgraded academic core and career cluster area.**
Enrolling students in a challenging, focused program of study is a key condition for any high school integration effort. The Southern Regional Education Board recommends replacing the general track by requiring at least 90 percent of students to complete four years of college preparatory English; three years of mathematics, including two courses equivalent to Algebra I and geometry or higher; three science courses, including two courses acceptable to major universities as lab science courses; and three social studies courses. In addition to an upgraded academic core, students should complete at least 600 hours in an academic or a career cluster area.

5: **Create a school organization, structure, and schedule enabling teachers to work together in integrating academic and technical studies.**
To develop integrated learning approaches that advance student achievement, teachers must have quality time and resources for collaboration. System and school leaders must find ways to bring teachers together during the school year and in the summer to strengthen respect, trust, and cooperation needed in integrated learning.

6: **Broaden classroom assessment to include student products and performances.**
Traditional assessment methods must be expanded to measure students' progress in integrated learning. If students are expected to solve problems, problem solving must be the focal point of homework, tests, and assessment associated with this instruction. In real life, individuals are evaluated on how they use what they know. Students take assessment more seriously if it is linked to reality and if they understand the evaluation criteria and process in advance.

7: **Provide staff development to support teachers in integrating academic and technical studies.**
Schools wanting to integrate academic and vocational studies must offer staff development on integration. In fact, many school leaders identify staff development as the key to success in providing integrated learning.

Academic and vocational teachers at new *High Schools That Work* sites in 1993 and 1994 listed common planning time as a staff development priority. Teachers said they would like to observe outstanding practices in other classrooms and schools. They would also like to visit workplaces to view how academic skills are used in daily activities.

8: **Involve parents in the effort to integrate academic and vocational studies.**
Parents and schools need to work hand-in-hand in helping career-bound students succeed in a challenging, integrated curriculum.

9: **Be willing to learn as you go.**
Schools need to create an environment of continuous improvement in integrating academic and vocational studies and in raising student achievement. Integration works best when school leaders recognize that improvement takes place little by little, day by day.

LOOKING AT THE BIG PICTURE:
Conditions Leading to Effective Integrated Learning

Instructions: Check where your school is in establishing the conditions that lead to effective integration of academic and vocational courses. Compare your response with others on your team.

Conditions	Not Started	Planning Stages	Some Activities Taking Place	Making Significant Progress
Set higher expectations and get students to meet them.				
Teach challenging vocational technical studies, including emphasis on the use of academic content in the workplace.				
Drop low-level academic courses and prepare academic teachers to teach the essential concepts from the college preparatory curriculum.				
Require students to complete a challenging program of study consisting of an upgraded academic core and a major.				
Create a school organization, structure, and schedule enabling teachers to work together in integrating academic and technical studies.				

Southern Regional Education Board, High Schools That Work Teleconference

LOOKING AT THE BIG PICTURE (CONTINUED)

Conditions	Not Started	Planning Stages	Some Activities Taking Place	Making Significant Progress
Broaden classroom assessment to include student products and performance.				
Provide staff development to support teachers in integrating academic and technical studies.				
Involve parents in the effort to integrate academic and technical studies.				
Be willing to learn as you go.				

What needs to happen for our group to get started planning an integrated activity?

What needs to happen? (Prioritize)	What can we do to make it happen?	Target Dates	Who do we need to consult?	Who is responsible for making a decision about this?	Status

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Options for Integrated Curriculum Design

- Discipline Based
- Parallel Disciplines
- Multidisciplinary
- Interdisciplinary Units/Courses
- Integrated Day
- Field-Based Program

Integrated Curriculum Design Options

Discipline-Based Design

The discipline-based content design option focuses on a strict interpretation of the disciplines with separate subjects in separate time blocks during the school day. No attempt at integration is made; in fact, it is avoided. Traditional approaches to subjects such as language arts, mathematics, science, social studies, music, art, and physical education are the usual fare. In secondary programs, these general academic and arts areas break down into more specific fields, such as algebra under mathematics, or American history under social studies. There are some variations of block scheduling and the way the week or cycle is programmed. Nevertheless, knowledge is presented in separate fields without a deliberate attempt to show the relationships among them.

Parallel Disciplines Design

When the curriculum is designed in a parallel fashion, teachers sequence their lessons to correspond to lessons in the same area in other disciplines. For example, if the social studies teacher teaches a World War II unit in the beginning of the spring semester, then the English teacher will reschedule her autumn book to coincide with the social studies unit. The content itself does not change, only the order in which it appears. The goal is a simultaneous effect as students relate the studies in one subject with the others. Teachers working in a parallel fashion are not deliberately connecting curriculum across fields of knowledge; they are simply resequencing their existing curriculum in the hope that students will find the implicit linkages.

Multidisciplinary Design

The multidisciplinary option suggests that certain related disciplines be brought together in a formal unit or course to investigate a theme or issue. It is different from parallel teaching, where the focus stays on the prescribed scope and sequence of each discipline. A good analogy is a color wheel and the notion of complementary colors. Just as groups of colors complement one another, certain disciplines are directly related to one another, such as the humanities. Of course, it is possible to design a course that brings together two disciplines of seemingly different characters – as long as the questions shed light on and complement one another (as in a course on "Ethics in Science").

Interdisciplinary Design

In this design, periodic units or courses of study deliberately bring together the full range of disciplines in the school's curriculum: language arts, math, social studies, and science; and the arts, music, and physical education. The main point is that the designers attempt to use a full array of discipline-based perspectives. The units are of specific duration: a few days, a few weeks, or a semester. This option does not purport to replace the discipline-field approach; rather, they are mutually supportive.

Integrated-Day Design

This model is based primarily on themes and problems emerging from the student's world. The emphasis is on an organic approach to classroom life that focuses the curriculum on the student's questions and interests rather than on content determined by a school or state syllabus.

Field-Based Program

This approach is the most interdisciplinary form of integration. Students live in the school environment and create the curriculum out of their day-to-day lives. For instance, students who are interested in the buildings on campus might study architecture. If there were a conflict between students concerning ways to behave in the school, they could study rules or government. This is a totally integrated program because the student's life is synonymous with school.

Source: Jacobs, H.H., ed. (1989). *Design and Implernentation* (pp. 14-18). Alexandria, VA: ASCD

RATING INTEGRATION APPROACHES

Integrated Learning Approach ______________________________
____

Pros:

Cons:

Integrated Learning Approach ______________________________
____

Pros:

Cons:

Concepts of Integration:

1. Effective working relationships exist between academic and vocational technical teachers.

2. Academic and vocational technical teachers have scheduled time to plan and work together.

3. School administrators as well as teachers are committed to integrating educational programs.

4. All students are provided the opportunity and expected to complete a rigorous course of study.

Integrated System

Integration Basics

- Organized around career clusters;
- Based on validated standards;
- Based on strong foundation of high level contextual, cognitive, and work-related skills;
- Includes assessment component; and
- Provides multiple exit points

Curriculum Alignment

CURRICULUM
ALIGNMENT

INTEGRATION OF ACADEMIC AND VOCATIONAL EDUCATION
STEPS FOR DESIGNING A UNIT OF STUDY

1. First individually, and then as a team, complete the curriculum alignment process to determine common areas of content and/or standards. Discuss possible theme/topic areas which would allow all team members to enter the integration process.

2. Decide on a unit theme/topic based on an area of study, problem or issue. Themes could be industry, career or community focused. List the subject/discipline areas to be included as "spokes" surrounding the theme/topic hub.

3. Identify a major concept to serve as an integrating lens, or focus for the study.

4. Incorporate the theme/topic and concept, develop a goal or rationale statement that frames the study.

5. Brainstorm essential understandings (generalizations) that students may derive from the study. From this list, select three to five items to list as guiding or essential questions to further frame the unit. These questions are usually in the "who," "what," "how," and "why" format.

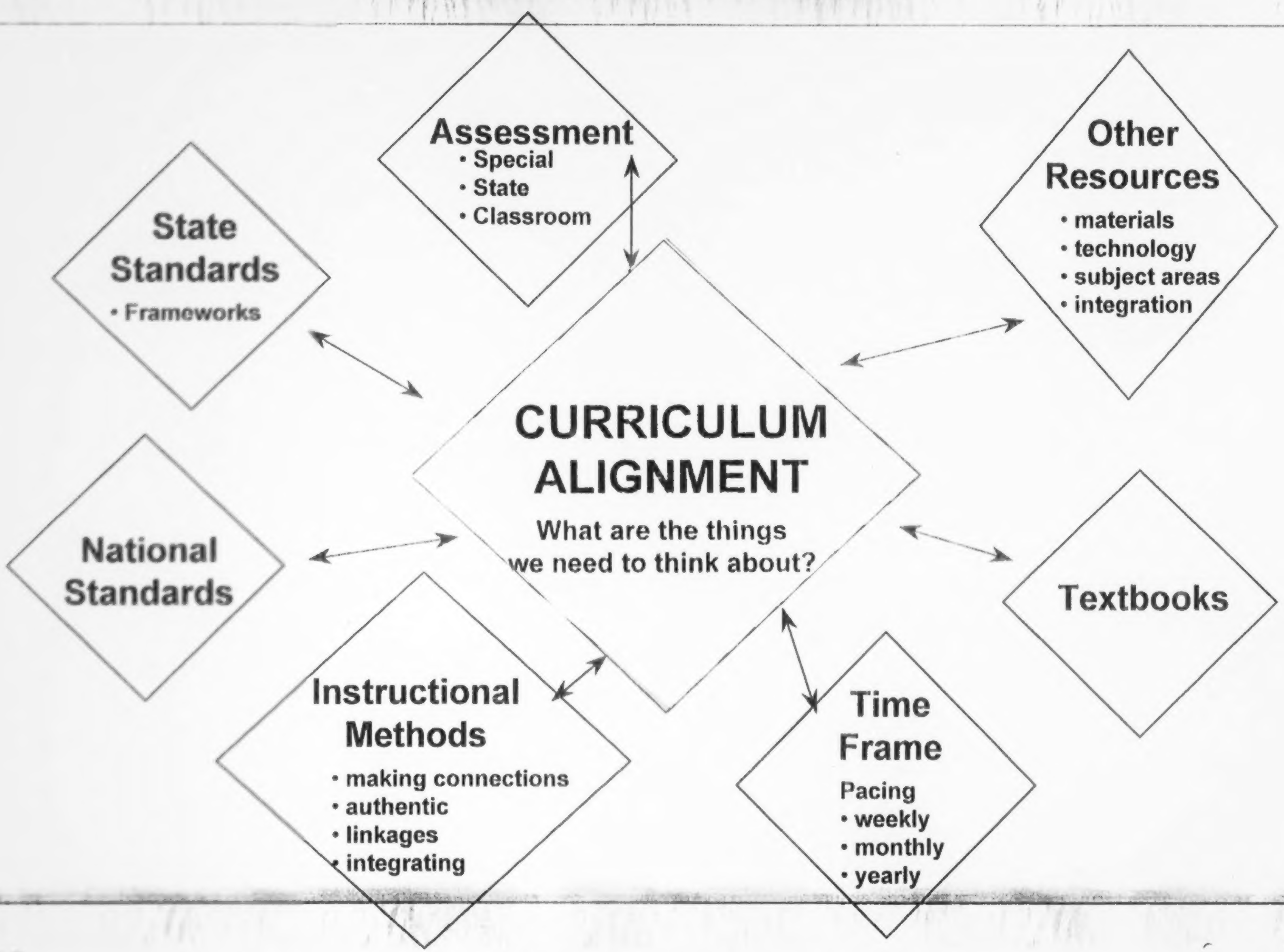
6. Using the goal/rationale statement as a guide, determine career readiness and academic and skill standards that will be emphasized and included as a part of the project.

7. Determine student outcomes as a result of the study. "What should the student know and be able to do upon completion?"

8. As a team, discuss instructional activities and strategies, using the concept, theme, goal/rationale statement, essential questions, standards and outcomes as the framework. Consider individual learning styles and include activities that address the multiple intelligences.

9. Design the specific performance tasks and scoring guide (rubric) to be used as a basis for assessment.

CURRICULUM ALIGNMENT



CURRICULUM ALIGNMENT

What are the things we need to think about?

Assessment
- Special
- State
- Classroom

State Standards
- Frameworks

Other Resources
- materials
- technology
- subject areas
- integration

National Standards

Textbooks

Instructional Methods
- making connections
- authentic
- linkages
- integrating

Time Frame

Pacing
- weekly
- monthly
- yearly

Curriculum Alignment

Timeframe	Course 1	Course 2	Course 3	Course 4	Course 5
Week 1					
Week 2					
Week 3					
Week 4					
Week 5					
Week 6					
Week 7					
Week 8					
Week 9					

TOPIC: The Spencer, SD Tornado of 1998 CONCEPT: Interdependence

PROJECT RÂTIONALE: Students will

CURRICULUM MAP

Timeframe	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6	Course 7
	Agriculture: Natural Resources	Social Studies	Language Arts	Carpentry	General Business	Health	Family & Consumer Science
Week 1	Water quality	Grief, death, & dying	The Wizard of Oz – the book	Assessing community needs for new buildings	Insurance and claims	First Aid/Trauma care	Consumer resource management: fiscal resources and needs
Week 2	Landscaping – tree and other vegetation replacement	Coping with disaster	The Wizard of Oz – the book	Architectural design: designing & drawing blueprints	Community needs assessment	Food and water safety	Fiscal resources and needs
Week 3	Soils and fertilization	Coping mechanisms	The Wizard of Oz – the movie	Designing and drawing	Loan availability	Health maintenance/ prevention of injuries	Family Health: parenting and human development, personal resources and needs
Week 4	Soils and fertilization	Coping mechanisms	The Wizard of Oz – the movie	Designing and drawing	Developing business plans	Nutrition	Parenting and human development

GOAL/RATIONALE

CONCEPTS

ESSENTIAL
QUESTIONS

THEME

Project Theme

A theme is designated as the central idea and used as an overlay to the various content areas for an interdisciplinary approach with alignment to outcomes. The theme provides a fresh lens with which to frame and view content. The theme acts as a common umbrella that is visible to students as they work in the various content areas.

There are many ways to develop a common theme. Two of these are briefly described here.

Topics These are headings or outlines about a particular subject matter. Examples of topics would be *immigration, war, flight, oil,* or *environment*. Other topics could be current events or particular issues such as *homelessness* or *AIDS*.

Categories These are a group or classification to which particular facts and experiences belong. Examples would be *islands, animals, countries,* or *dance*.

Concept

A concept is an organizing idea
that is . . .

timeless, transferable, and universal.

Vocational technical and academic courses share common concepts.

FACS	Math	Agriculture	Technology Ed.	Science
Change	Change	Change	Change	Change
Cause/ effect	Cause/ effect	Cause/ effect	Cause/ effect	Cause/ effect
Proportion	Proportion	Proportion	Proportion	Proportion
Systems	Systems	Systems	Systems	Systems
Cycles	Cycles	Cycles	Cycles	Cycles

WHY CONCEPT-BASED INTEGRATED PROJECTS?

1. To help students achieve higher level thinking:

   Knowledge
   Comprehension
   Application
   Analysis
   Synthesis
   Evaluation

2. To deepen students' understanding

3. To help students see patterns and connections between subjects and grade levels

4. To connect to prior learning

5. To take students beyond disciplines

6. To provide a way for students to transfer knowledge and skills to new situations and real-life experiences

7. To offer a way to deal with the information explosion

CONCEPTS & TOPICS: WHAT'S THE DIFFERENCE?

Conflict
Family
Culture
Change
Human Rights
China
Power
Circus
Revolution
Model
Dinosaurs
Systems
Bears

1. Topics are isolated, aim at lower level thinking, have short-term use, and increase the overload on the curriculum.

2. Concepts-
   - provide a mental pattern for categorizing common examples,
   - lead to higher order thinking,
   - aid in development of higher order generalizations,
   - lead to essential understandings,
   - serve as tools for processing life events, and
   - reduce the overload on the curriculum by making learning transferable from one discipline to another, from one grade to the next, and from school to life experience.

DISCIPLINE CONCEPTS

SCIENCE	**MATHEMATICS**	**TECHNOLOGY EDUCATION**	**FAMILY & CONSUMER SCIENCES**	**VISUAL ART**
Cause/effect Order Organism Population Systems Change Evolution Cycle Interaction Energy/matter Equilibrium Field Force Model Time/space Theory Replication	Number Ratio Proportion Scale Symmetry Probability Pattern Interaction Cause/effect Order Quantification Systems Theory Field Gradient Invariance Model	Order Models Force Systems Change Interaction Scale Cause/effect Application Interdependence Resources Society Environment Diverse cultures Uniformity	Families Relationships Change Culture Health Conflict/Cooperation Space Diversity Resources Systems Proportion Color Nutrition Parenting Cause/effect	Rhythm Line Color Value Shape Texture Form Space Repetition Balance Angle Perception Position Motion Light
LITERATURE	**SOCIAL STUDIES**	**AGRICULTURE**	**BUSINESS**	**MUSIC**
Cause/effect Order Patterns Character Interconnections Change Evolution Cycle Interaction Perception Intrigue Passion Hate Love Family Conflict/Cooperation	Cause/effect Order Patterns Population Systems Change Culture Evolution Cycle Interaction Perception Civilization Migration Immigration Interdependence Diversity Conflict/Cooperation Innovation Beliefs/Values	Systems Probability Cycles Change Interaction Interdependence Conflict/Cooperation Population Diversity Power Systems Ratios Proportions Cause/effect Innovation	Systems Probability Cycles Change Interaction Interdependence Conflict/Cooperation Population Diversity Motivation Power Systems Cause/effect	Rhythm Melody Harmony Tone Pitch Texture Form Tempo Dynamics Timbre Pattern Perception Diversity

Project Goal/Rationale

- a short summary statement of the project stating what the student will know and be able to do upon completion
- must incorporate the project theme or topic as well as the concept
- uses an action verb that can be measured (ex. - demonstrate, explain - See page 100.)

CRITERIA FOR DEVELOPING ESSENTIAL QUESTIONS

1. They will lead to the essential understandings expected from the project/unit.
2. They highlight conceptual priorities for a specific target population.
3. They fulfill learning outcomes.
4. There are usually two to five questions.
5. Use how, why, and what questions for the most part. They lead students to higher order thinking skills and essential understandings.
6. Include both specific questions and open-ended questions.
7. Write a realistic set of questions for the time frame allocated for the project.
8. Each question embraces a distinct section of activity within the project/unit.
9. Involve students in developing the essential questions for the project.
10. POST the questions in every classroom involved in the integrated unit.
11. Use questions to connect the disciplines represented in the project.
12. *EVERY* student can understand the questions.

The fundamental design question is

"Given the amount of time we have to spend on this particular unit of study, what is the essence of the unit; what is essential for the learners in my care to explore?"

WHAT IS AN ESSENTIAL QUESTION?

- the heart of the curriculum
- an organizer
- a creative choice
- a conceptual commitment
- a skill to be encouraged in students

Standards

STANDARDS

SCANS Standars

(THE SECRETARY'S COMMISSION ON ACHIEVING NECESSARY SKILLS)

WORKPLACE KNOW-HOW

COMPETENCIES - Effective workers can productively use:

- **RESOURCES** - allocating time, money, materials, space, & staff;
- **INTERPERSONAL SKILLS** - working on teams, teaching others, serving customers, leading, negotiating, and working well with people from culturally diverse backgrounds;
- **INFORMATION** - acquiring and evaluating data, organizing and maintaining files, interpreting and communicating, and using computers to process information;
- **SYSTEMS** - understanding social, organizational, and technological systems, monitoring and correcting performance, and designing or improving systems;
- **TECHNOLOGY** - selecting equipment and tools, applying technology to specific tasks, and maintaining and troubleshooting technologies.

THE FOUNDATION - Competence requires:

- **BASIC SKILLS** - reading, writing, arithmetic and mathematics, speaking, and listening;
- **THINKING SKILLS** - thinking creatively, making decisions, solving problems, seeing things in the mind's eye, knowing how to learn, and reasoning;
- **PERSONAL QUALITIES** - individual responsibility, self-esteem, sociability, self-management, and integrity.

The SCANS Report, 1991

EXAMPLES OF EMPLOYABILITY-RELATED STUDENT ACTIVITIES

Resources

Allocates Time. Selects relevant, goal-related activities, ranks them in order of importance, allocates time to activities, and understands, prepares, and follows schedules.

Examples:
- construct a timeline chart, e.g., Gantt, PERT;
- understand the concept of critical path;
- estimate the time required to complete a project by task; or
- use computer software, e.g., Harvard Project Planner, to plan a project.

Allocates Money. Uses or prepares budgets, including cost and revenue forecasts; keeps detailed records to track budget performance; and makes appropriate adjustments.

Examples:
- estimate costs;
- prepare a multi-year budget using a spreadsheet; or
- do a cost analysis.

Allocates Material and Facility Resources. Acquires, stores, and distributes materials, supplies, parts, equipment, space, or final products in order to make the best use of them.

Examples:
- lay out a workspace document with narrative and graphics using desktop publishing software;
- demonstrate understanding of First In First Out (FIFO) and Just in Time (JIT) inventory systems; or
- design a request for proposal (RFP) process.

Allocates Human Resources. Assesses knowledge and skills and distributes work accordingly, evaluates performance, and provides feedback.

Examples:
- develop a staffing plan;
- write a job description;
- conduct a performance evaluation.

From: "Teaching the SCANS Competencies."

INTERPERSONAL

Participates as a Member of a Team. Works cooperatively with others and contributes to group with ideas, suggestions, and effort.

Examples:

- collaborate with group members to solve a problem;
- develop strategies for accomplishing team objectives; or
- work through a group conflict situation.

Teaches Others. Helps others learn.

Examples:

- train a colleague on-the-job; or
- explore possible solutions to a problem in a formal group situation.

Serves Clients/Customers. Works and communicates with clients and customers to satisfy their expectations.

Examples:

- demonstrate an understanding of who the customer is in a work situation;
- deal with a dissatisfied customer in person; or
- respond to a telephone complaint about a product.

Exercises Leadership. Communicates thoughts, feelings, and ideas to justify a position; and encourages, persuades, convinces, or otherwise motivates an individual or group, including responsibility for challenging existing procedures, policies, or authority.

Examples:

- use specific team-building concepts to develop a work group;
- select and use an appropriate leadership style for different situations; or
- use effective delegation techniques.

Negotiates. Works toward an agreement that may involve exchanging specific resources or resolving divergent interests.

Examples:

- develop an action plan for negotiating;
- write strategies for negotiating; or
- conduct an individual and a team negotiation.

Works with Cultural Diversity. Works well with men and women and with a variety of ethnic, social or educational backgrounds.

Examples:

- demonstrate an understanding of how people with differing cultural/ethnic backgrounds behave in various situations (work, public places, social gatherings); or
- demonstrate the use of positive techniques for resolving cultural/ethnic problem situations.

From: "Teaching the SCANS Competencies"

INFORMATION

Acquires and Evaluates Information. Identifies need for data, obtains it from existing sources or creates it, and evaluates its relevancy and accuracy.

Examples:
- develop a form to collect data;
- research and collect data from appropriate sources, (library, on-line data bases, Internet, field research); or
- develop validation instrument for determining accuracy of data collected.

Organizes and Maintains Information. Organizes, processes, and maintains written or computerized records and other forms of information in a systematic fashion.

Examples:
- develop a filing system for storing information (printed or computerized;
- develop an inventory record-keeping system; or
- develop a bill processing system.

Interprets and Communicates Information. Selects and analyzes information and communicates the results to others using oral, written, graphic, pictorial, or multi-media methods.

Examples:
- produce a report using graphics to interpret and illustrate associated narrative information;
- make an oral presentation using several different media to present information (slides, overheads, film, audio); or
- develop material for communicating information to be used during a teleconference call.

Uses Computers to Process Information. Employs computers to acquire, organize, analyze, and communicate information.

Examples:
- use a computer spreadsheet, e.g., Lotus 1-2-3, to develop a budget;
- use a computer graphics program, e.g., Harvard Graphics, to prepare overheads for a report; or
- use on-line computer data bases, e.g., Lexus, New York Times, ERIC, to research a report.

From: "Teaching the SCANS Competencies"

Systems

Understands Systems. Knows how social, organizational, and technological systems work and operates effectively within them.

Examples:
- draw and interpret an organizational chart;
- develop a chart that illustrates an understanding of stocks and cash flows; or
- draw a diagram that illustrates a technological problem definition and problem-solving process.

Monitors and Corrects Performance. Distinguishes trends, predicts impact of actions on system operations, diagnoses deviations in the function of a system/organization, and takes necessary action to correct performance.

Examples:
- generate a statistical process control (SPC) chart;
- develop a forecasting model; or
- develop a monitoring process.

Improves and Designs Systems. Makes suggestions to modify existing systems to improve products or services, and develops new or alternative systems.

Examples:
- draw a diagram showing an improved organizational system based on Deming's 14 points; or
- choose a situation needing improvement, break it down, examine it, propose an improvement, and implement it.

Technology

Selects Technology. Judges which set of procedures, tools, or machines, including computers and their programs, will produce the desired results.

Examples:
- read equipment descriptions and technical specifications to select equipment to meet needs;

Applies Technology to Task. Understands the overall intent and the proper procedures for setting up and operating machines, including computers and their programming systems.

Examples:
- set up/assemble appropriate equipment from instructions.

Maintains and Troubleshoots Technology. Prevents, identifies, or solves problems in machines, computers, and other technologies.

Examples:
- read and follow instructions for troubleshooting and repairing relevant equipment; or
- read and follow maintenance instructions for keeping relevant equipment in good working order.

From: "Teaching the SCANS Competencies" **63**

IDEAS FOR INTEGRATING EMPLOYABILITY COMPETENCIES INTO ACADEMIC COURSES

HISTORY

A local resident lives in a home that is more than 100 years old. Help the resident apply for a Texas Historical Marker and/or National Registry.

CHEMISTRY

Design the "perfect chemical storeroom.

Write a protocol for shutting down a laboratory in case of emergency.

BIOLOGY

Plan the clean-up of an ecologically sensitive area.

Prepare the pruning, fertilizing and planting schedule for the campus for optimum flowering and showiness at all times during the year, within a $$$ budget.

ART

Create a marketing/advertising campaign for a local non-profit, charitable group.

Design a user-friendly map of the campus for visitors.

ENGLISH

Create "Cliff Notes" on various pieces of literature for a lower level class.

Write resumes for literary characters, e.g., Macbeth, Lady Macbeth

SPANISH

Plan a trip from your location to Mexico, Central America, South America, or Spain.

ACTIVITY

Your Assignment

1. Choose one of the ideas listed on page 68.

2. List the tasks performed by students. (Can be in random order.)

3. Using the SCANS Competencies, identify the skills demonstrated by the students.

Tasks Performed	SCANS Competencies Demonstrated

Instructional Strategy Development Form

1. ***Using complete sentences,*** **describe 7 (at least)-9(max)** ***specific projects/activities to be done in the classroom. Correlate each task with the appropriate SCANS foundation skill/competency.***

For example, one of the projects in a mathematics class might be: "*Present the results of a survey to the class, and justify the use of specific statistics to analyze and represent the data.*"

(Use Complete Sentences)	**Foundation Skills**	**Competencies**
1) *Plan the material and time requirements for a chemistry experiment, to be performed over a two-day period, that demonstrates a natural growth process in terms of resource need.*	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
2) *Work in a group to design an experiment to analyze the lead content in the school's water. Teach the results to an elementary school class.*	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
3) *In an entrepreneurship project, present statistical data on a high-tech company's production/sales. Use the computer to develop statistical charts.*	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
4) *Build a model of human population growth that includes the impact of the amount of food available on birth/ death rates etc. Do the same for a growth model for insects.*	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
5) *Calibrate a scale to weigh accurate portions of chemicals for an experiment. Trace the development of this technology from earliest uses to today.*	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
6)	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
7)	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
8)	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology

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Instructional Strategy Development Form

1. ***Using complete sentences,*** **describe 7 (at least)-9(max)** ***specific projects/activities to be done in the classroom. Correlate each task with the appropriate SCANS foundation skill/competency.***

For example, one of the projects in a mathematics class might be: *"Present the results of a survey to the class, and justify the use of specific statistics to analyze and represent the data."*

(Use Complete Sentences)	**Foundation Skills**	**Competencies**
1) ____________________ ____________________ ____________________	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
2) ____________________ ____________________ ____________________	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
3) ____________________ ____________________ ____________________	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
4) ____________________ ____________________ ____________________	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
5) ____________________ ____________________ ____________________	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
6) ____________________ ____________________ ____________________	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
7) ____________________ ____________________ ____________________	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology
8) ____________________ ____________________ ____________________	☐ Basic ☐ Thinking ☐ Personal Qualities	☐ Resources ☐ Informational ☐ Interpersonal ☐ Systems ☐ Technology

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INSTRUCTIONAL COMPARISON
Traditional Instruction vs Standards-Based Education

TRADITIONAL LESSON PLANNING	STANDARDS-BASED INSTRUCTIONAL ORGANIZER
1. What content will I teach?	1. What content standard(s) will students learn (what should they know and be able to do)? How is this content relevant; how can students apply it?
2. How will I teach it?	2. How will students show what they know and can do? What evidence will they provide? What authentic tasks might they use?
3. What material will I need?	3. What might their work look like if it is…advanced, proficient, basic, and below basic?
4. What assignments will I give to students?	4. What content, unit, or curriculum will help students "get there"? What essential learnings or components do students need? How do these learnings relate to the unit focus?
5. What activities will I do in class?	5. What teaching strategies might help various students "get there"? What adaptations might be needed? How might technology be used?
6. How long will the unit take?	6. Are students "getting there"? Are students developing knowledge and skills aligned to the standard? Are adjustments in teaching strategies needed?
7. What homework will I assign?	7. What help might students receive during the assessment without invalidating results?
8. How will I test whether or not they learned it?	8. How well did each of the students do? What should be refined, revised, retaught in another unit? Was the assessment valid? Did the scoring rubric have validity?
9. What is the next unit?	

The South Dakota Crosswalk Project

PURPOSE

DWCP is offering the crosswalk exercise to assist schools and programs to continue to increase rigor and relevance to the curriculum.

The crosswalk is a process for identifying where vocational technical courses and programs use, enhance, and/or teach academic content standards.

RELEVANCE

How many times has a teacher heard a student ask, "When will I ever use what you're teaching me today?" How often do we hear of employers complaining that high school graduates may have passed all the tests, but they can't seem to use what they know? These comments should raise a warning flag about the quality of American education.

The kinds of skills needed in contemporary society are different from those traditionally taught in American schools, and the level of academic and technical competency required in them is higher than ever before.

INTENT

Students will demonstrate higher level academic skills through application of knowledge and skills to real-world settings.

Schools will periodically review all curricula for academic content and measure the effectiveness of learning through application.

Integrated projects and student assessment will be integral to a school's curriculum.

Schools will meet or exceed all legislative requirements and recommendations concerning academic excellence.

DWCP will give direction to this exercise by . . .

Developing an instrument, which will be used to identify technical standards that reflect or enhance state academic standards in mathematics and communications/language arts. Science and social studies standards will be crosswalked upon approval by the South Dakota State Board of Education

Providing technical assistance to programs in making changes and enhancing curriculum through the Program Improvement Process.

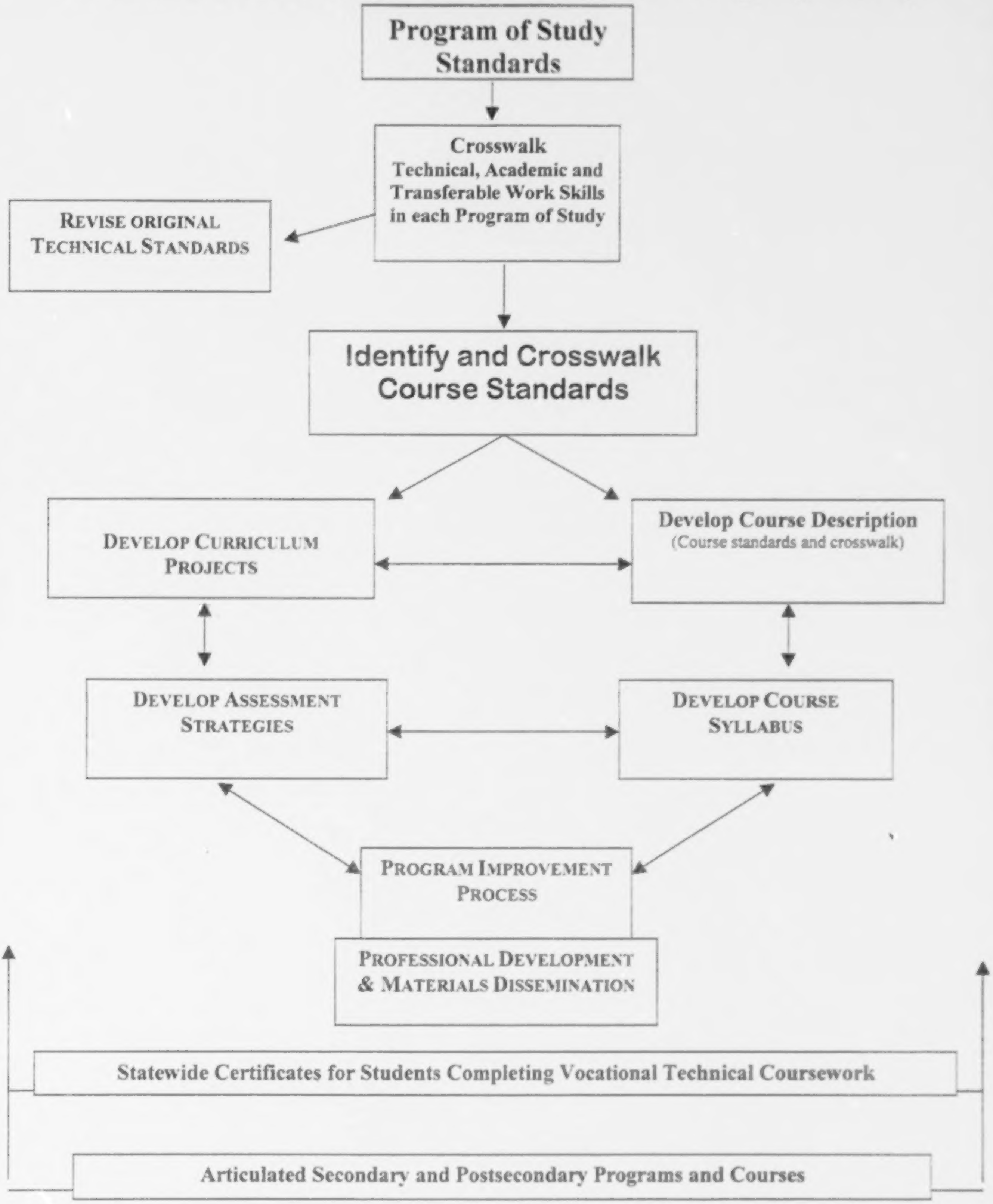
Providing workshops to assist instructors in matching current curriculum standards to that of the academic standards

PROJECT GOAL

The Crosswalk will become a significant part of the Perkins Core Standards and Measures and the Program Improvement Process conducted by all technical programs.

Academic and technical instructors working jointly will increase the academic rigor in technical programs, as well as application of knowledge and skills in academic programs.

South Dakota's Plan for Designing Programs and Courses for Quality Learning


Program of Study Standards
Crosswalk Technical, Academic and Transferable Work Skills in each Program of Study
REVISE ORIGINAL TECHNICAL STANDARDS
Identify and Crosswalk Course Standards
DEVELOP CURRICULUM PROJECTS
Develop Course Description (Course standards and crosswalk)
DEVELOP ASSESSMENT STRATEGIES
DEVELOP COURSE SYLLABUS
PROGRAM IMPROVEMENT PROCESS
PROFESSIONAL DEVELOPMENT & MATERIALS DISSEMINATION
Statewide Certificates for Students Completing Vocational Technical Coursework
Articulated Secondary and Postsecondary Programs and Courses

CROSSWALK OF TECHNICAL, ACADEMIC, AND TRANSFERABLE WORK SKILLS STANDARDS PROJECT

SD Communications Language Arts Standards		Benchmarks - Grades 9-12	Mastery Level	Technical Standards	Transferable Work Skills
Goal	Indicator				
GOAL 2 – WRITING Students will write effectively for different audiences and specific purposes.	4. Students will write to clarify and enhance understanding of information.	a. Write to clarify thinking and what is known about various topics.		**Agriculture/Natural Resources:** Describe types of soil erosion **Business Office:** Prepare cost justification for office equipment and furniture **FACS/Interpersonal Relationships:** Examine how differences and similarities among people affect communication.	**Foundation Skills** **Basic Skills:** Writing **Thinking Skills:** Decision making; Problem solving; Reasoning **Personal Qualities:** Responsibility; Self-Management **Competencies** **Information:** Acquires and evaluates information; Interprets information; Organizes and maintains information; Interprets and communicates information

CROSSWALK OF TECHNICAL, ACADEMIC, AND TRANSFERABLE WORK SKILLS STANDARDS PROJECT

SD Mathematics Standards		Benchmarks - Grades 9-12	Mastery Level	Technical Standards	Transferable Work Skills
Goal	Indicator				
GOAL 6 - STATISTICS AND PROBABILITY Students will apply statistical methods to analyze data and explore probability for making decisions and predictions.	*Indicator 2*: Apply the laws of probability to predict outcomes and solve problems.	**b.** develop convincing arguments and inferences supported by the simulations.		**Agriculture - Natural Resources:** Calculate soil loss using erosion loss equation. **Business Office:** Prepare cost justification for office equipment and furniture. **FACS - Career, Family, and Community Connections:** Evaluate the cost of technologies in relation to various roles in terms of labor-saving, safety, health and well-being criteria.	**Foundation Skills** **Basic Skills**: Mathematics **Thinking Skills:** Problem Solving; Reasoning; Decision Making **Competencies** **Information:** Acquires and Evaluates Information; Interprets Information **Resources:** Allocates Money **Interpersonal:** Negotiates to Arrive at a Decision **Systems:** Understands Systems; Improves and Designs Systems **Technology:** Selects Technology

Instructional Strategies

INSTRUCTIONAL STRATEGIES

ENGAGING INSTRUCTIONAL STRATEGIES

1. Classroom pacing (Harmin, 1994) is a collection of strategies that can vary and enliven the pace of a classroom.
    - Whip Around, Pass Option—Students give a short response to a question or issue with the option of "passing" if they do not choose to respond. Taking turns should be done quickly around the class.
    - Questions, All write—The teacher poses a question and gives the class time to write a response before discussing it orally. This process requires all students to think about the question, not just the first student to raise his or her hand.
    - Ask a friend—When students ask the teacher to repeat an assignment, clarify directions, or provide other information, the teacher responds, "Ask three then me." (Moorman, 1989). Students are pushed to think together.
    - Speak-write—Students need to know how to listen actively and take notes. In the speak-write strategy, the teacher instructs students to listen initially without taking notes. After three or four minutes, the teacher pauses and instructs students to write one or more of the following: a summary, questions, reactions, or anything else. Following this activity, pairs of students clarify questions and discuss reactions.

2. Questioning strategies Skillful teacher questioning can reverse the traditional high ratio of teacher talk to student talk and can encourage students to think before speaking. However, questions for their own sake are not necessarily valuable. Numerous classroom studies have found that teacher questions focus on low-level recall. Kindsvatter, Wilen, and Ishler (1988) outline these criteria for effective teacher questioning:
    - Phrasing—Questions are clearly stated.
    - Adapting questions—Questions follow a purposeful sequence.
    - Balance—A balance exists between convergent questions (knowledge, comprehension, and application) and divergent questions (analysis, synthesis, and evaluation).
    - Participation—Teacher involves more students and redirects questions for more than one answer.
    - Probing—Students are challenged to complete, clarify, expand, or support their statements.
    - Wait time—Teacher pauses after questions to allow time for thought. Teacher also pauses after student responses to allow time for qualification and elaboration.
    - Student questions—Students are encouraged to formulate questions at all levels of cognitive complexity.

Source: Southern Regional Education Board/High Schools That Work

3. Reading in every class In the ReQuest strategy (Manzo, 1969), teachers and students take turns asking each other questions about a text. This approach allows the teacher to model thoughtful engagement with the text and students to practice active and purposeful reading.

Raphael (1984) provides a framework for student questioning that engages students in classifying comprehensive questions according to how they can be answered. The first two categories are "In My Head" and "In the Book," a distinction that pushes students to discriminate between prior knowledge and knowledge to be gained. Each category is further subdivided. "In the Book" includes two answer sources: "Right There" and "Putting It Together." Students distinguish between information that is stated directly and knowledge that is put together through more complex reasoning processes. Similarly, the category "In My Head" includes "The Author and Me," a synthesis of prior knowledge with text information and "On My Own." Either category may require further research. The process of identifying types of questions and text information makes students aware of their own strategies for gaining information from texts.

4. Completed products Brophy (1987) suggests that one source of intrinsic motivation is being able to complete products. The following list includes a variety of student products:
   - Written Products
     Directions/manual
     Scripts/transcripts
     Autobiographies
     Bibliographies
     Proposals
     Journals
     Logs and field notes
     News articles
     Essays
     Summaries
     Advertisements

   - Mathematical Products
     Mathematical models
     Computer programs
     Budgets
     Charts and graphs
     Blueprints
     Scale drawings/models
     Estimates

- Oral Products
  Debates
  Storytelling
  Poetry
  Presentations
  Eyewitness reports

- Electronic Products
  Databases
  Spreadsheets
  Computer simulations
  Multimedia presentations
  Computer programs
  Broadcasts
  Recordings
  Computer graphics

- Three Dimensional Products
  Dioramas
  Displays
  Sculptures
  Models
  Consumer products
  Structures
  Games

5. Research Methods. A range of research methods involves students directly in their learning: They include:
   - Observations:
     Field observations
     Case studies
     Experiments
     Collection of artifacts

   - Interviewing:
     Oral histories
     Interviews with experts
     On-the-street interviews
     Opinion polls
     Surveys

   - Document research:
     Original records
     Letters, diaries, journals
     Photographs

Source: Southern Regional Education Board/High Schools That Work

Newspaper and magazines
Databases
Reference books

6. Writing in every classroom

   - Student journals: Students develop the habit of using writing as a tool for thinking.
   - Entry tickets: Class begins with a short written response to a question that requires reflection on the previous day's lesson, elicits prior knowledge of the day's topic, or requires a response to the homework assignment.
   - Focusing: A journal entry during class provides a change of pace and an opportunity for reflection. The stimulus for writing can be as simple as "What do you understand at this point and what questions do you have?" or it may be a question that challenges students to analyze, synthesize, or evaluate the material being covered. A concluding entry can summarize the day's learning at the end of class.
   - Progress reports: Students can use journal entries to reflect their own strengths and weaknesses in relation to the course material. These reports provide a starting point for teacher and students to collaborate on strategies for improvement.
   - Practice essay questions: Students are frequently thrown into essay tests with minimal preparation. Regular practices with feedback will improve performance on "the real thing."
   - Reflective journal entries: Split-page journal entries can help students develop a habit of reflection.

7. Research papers: A traditional research paper can integrate curriculum when it is a shared assignment. Research can be focused in an area of vocational interest, with students graded for content by their vocational teacher and for organization and mechanics by their English teacher.

8. Lab experiments and reports: As science courses become more applied, opportunities increase for reporting procedures and results. Students can read published reports to see how professionals report their findings, and they can work in groups to create reports that reflect what they have done in the lab.

9. Demonstration video: Students can create videotapes that demonstrate a procedure used in their career field. Because the purpose is demonstrate the skill to others, the appropriate criterion for acceptability is 100 percent accuracy.

10. Creation of materials: Students learn subject matter when they are required to create study materials that teach content to others. They can create games, simulations, and graphic illustrations as well as more conventional forms such as outlines, timelines, and flow charts.

Source: Southern Regional Education Board/High Schools That Work

11. Peer evaluation: Students' participation in the evaluation of peer presentations and products is especially effective if those students participate in developing the evaluation criteria. Videotapes of presentations add to the depth of the evaluation process.

12. Incorporation of game-like features: Brophy (1987) suggests four features that should be included when assignments are made in the form of puzzles, brain teasers, or other games:
    - Require students to solve problems, avoid traps, or overcome obstacles to reach goals;
    - Call for students to explore and discover to identify the goal in addition to developing a method for reaching it;
    - Involve suspense or hidden information that emerges as the activity is completed;
    - Involve random aspect or uncertainty about what the performance outcome is likely to be given trial.

13. Individualization: The following strategies can be used to individualize instruction:
    - Individual checklist of skills accomplished—Because many vocational courses are directly related to skills in a field of specialization, students may be required to master a list of skills in order to complete a course. Students may be required to take responsibility for their own pacing on the checklist.

14. Teamwork: Slavin (1994) describes an approach to teamwork that maintains individual responsibility for mastering content and motivates students to bolster each other's learning. Five major components are:
    - Class presentations—The teacher presents a body of material, and students are clearly aware that attentiveness is essential to the success of their team.
    - Teams—Teams are made up of four or five students; they are mixed by past academic success, gender, race, and ethnicity. The goal of the team is to prepare members for a quiz that will cover the material given in the class presentation.
    - Quizzes—Quizzes cover one or two periods of class presentation and team score. Those points are based on *improvement* over a baseline average of past quiz scores. This requirement pushes individual students to continue raising their levels of performance.
    - Team recognition—A team whose average score exceeds a certain standard is rewarded with activities, bonus points toward individual grades, or other recognition.

Source: Southern Regional Education Board/High Schools That Work

15. Jigsaw: The jigsaw approach is another form of cooperative learning. Students work in small groups in which each person specializes in a component of a larger body of information or skill. Thus, each person possesses knowledge that is essential to the group. Clarke (1994) describes four stages of the process:

    - Introduction—After dividing the class into heterogeneous "home groups" of four to five students, the teacher establishes a context for the topic to be studied. Students leave their home groups and reorganize into focus groups, for example:

      Home groups: A B C D
      E F G H
      Focus groups: A E
      B F
      C G
      D H

      The teacher gives each focus group an aspect of a problem or topic to work together and may provide a set of guiding questions.

    - Reporting and reshaping—Home groups reconvene and students report what they learned in their focus groups. The emphasis during this stage is on posing questions and exploring ideas in depth.
    - Integration and evaluation—The teacher designs an activity that requires individuals or home groups to integrate their learning. Students also reflect on how they worked together and how they might proceed differently in the future.

Source: Southern Regional Education Board/High Schools That Work

QUESTIONING FOR QUALITY THINKING

Knowledge—Identification and recall of information.

Who, what, when, where, how ________________?
Describe ______________________________.

Comprehension—Organize and selection of facts and ideas

Retell ____________ in your own words.
What is the main idea of ________________?

Application—Use of facts, rules, principles

How is ________ an example of ____________?
How is ________ related to ____________?
Why is ______________ significant ?

Analysis—Separation of a whole into component parts

What are the parts of features of ____________?
Classify ________ according to ____________?
Outline/diagram/web ________________?
How does ____ compare/contrast with ________?
What evidence can you list for ____________?

Synthesis—Combination of ideas to form a new whole

What would you predict/infer from ________?
What ideas can you add to ____________?
How would you create/design a new ________?
What might happen if you combine ________?
with ______________________________?
What solutions would you suggest for ______?

Evaluation—Development of opinions, judgments, or decisions

Do you agree ________________?
What do you think about ____________?
What is the most important ____________?
Prioritize ______________________?
How would you decide about ____________?
What criteria would you use to assess ______?

STRATEGIES TO EXTEND STUDENT THINKING

- **Remember "wait time I and II"**
  Provide at least three seconds of thinking time after a question and after a response.
- **Utilize "think-pair-share"**
  Allow individual thinking time, discussion with a partner, and then open up the class discussion.
- **Ask "follow-ups"**
  Why? Do you agree? Can you elaborate? Tell me more. Can you give me an example?
- **Without judgement**
  Respond to student answers in a non-evaluative fashion.
- **Ask for summary (to promote active listening)**
  Could you please summarize John's point?
- **Survey the class**
  "How many people agree with the author's point of view?" ("thumbs up, thumbs down")
- **Allow for student calling**
  "Richard, will you please call on someone else to respond?"
- **Play devil's advocate**
  Require students to defend their reasoning against different points of view.
- **Ask students to "unpack their thinking"**
  "Describe how you arrived at your answer." ("think aloud")
- **Call on students randomly**
  Not just those with raised hands
- **Student questioning**
  Let the students develop their own questions
- **Cue student responses**
  "There is not a single correct answer for this question. I want you to consider alternatives."

McTighe, J. & Lyman, F. T. (1998). Cueing Thinking in the Classroom: The Promise of Theory-Embedded Tools. Educational Leadership, 45(7), 18-24. Permission to print by publisher.

MULTIPLE INTELLIGENCES FRAMEWORK

A *multiple intelligences framework* helps provide an enriched and accelerated educational program, as required by the Improving America's Schools Act school reform legislation.

As described in *Gardner's Frames of Mind*,[1] the theory of multiple intelligences proposes that individuals use at least eight intellectual capacities or talents to approach problems and create products.

These intelligences include:

Linguistic - Ability to use words and language effectively, both written and spoken

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Logical-Mathematical - Capacity to use numbers, inductive and deductive thinking, and abstract patterns

Visual-Spatial - Ability to visualize and create mental images

Bodily-Kinesthetic- Use of one's body to solve problems and communicate ideas and feelings

Musical - Capacity to recognize, create, reproduce and reflect on musical forms

Interpersonal - Ability to understand and interact effectively with others

Intrapersonal - Capacity to understand oneself, engage in self-reflection, knowing one's strengths and weaknesses

Naturalist - Ability to recognize and classify plants, minerals, and animals

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[1] Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences.* New York: Basic Books.

MULTIPLE INTELLIGENCES

Verbal/Linguistic Intelligence

We use our verbal/linguistic intelligence when we speak to each other, whether through formal speech or informal conversation. We use this intelligence when we put our thoughts down on paper, create poetry, or simply write a letter to a friend. Verbal/linguistic intelligence is involved in storytelling and creating, in all forms of humor that involve such things as plays on words, in the unexpected ending in a joke, and in a various funny twists of the language. This intelligence is involved in any use of metaphors, similes, and analogies, and, of course, in learning proper grammar and syntax in speaking and writing.

Exercises to Stimulate Verbal/Linguistic Intelligence

- Choose a word randomly from the dictionary and practice working it into normal conversations with other people.
- Get a book of word games and puzzles (for example, crosswords, jumbles, and so on) or play language-oriented table games (for example, Scrabble™, Spill and Spell™, and so on).
- Watch a TV drama or detective story, then write your own sequel, or tell what you think should happen in the next episode.
- Talk with someone about his or her ideas or opinions. Ask questions, have a discussion, or engage in friendly debate.
- Make a presentation on a topic that interests and excites you (for example, a hobby, a political view, a book you've read, or someone you know).

Logical/Mathematical Intelligence

You can see logical/mathematical intelligence in operation most clearly when you are involved in a situation that requires problem solving or meeting a new challenge. This intelligence is often associated with what we call "scientific thinking." We use our logical/mathematical intelligences when we recognize abstract patterns, such as counting by twos or knowing if we've received the right change at the supermarket. We use it when we find connections or see relationships between seemingly separate and distinct pieces of information. Logical/mathematical intelligences is responsible for the various patterns of thinking we use in our daily lives, such as making lists, setting priorities, and planning something for the future.

Exercises to Stimulate Logical/Mathematical Intelligence

- Practice analytical thinking by classifying a group of twelve randomly gathered objects. See if you can create a rationale for organizing them (for example, shape, color, size, use, and so on).
- Do a project that requires following step-by-step directions, for example, building something that is not prefab or cooking from scratch.
- Create a four-point outline telling about a movie you have seen; each of the points will have four subpoints, and each subpoint will have four more subpoints.
- Create a convincing, rational argument for something that is ridiculous, such as why a family pet should be allowed to sit at the table and eat with the family.
- Create a sequence of numbers that have a hidden pattern. See if someone else can discover the pattern.

Seven Pathways of Learning © 1994 Zephyr Press, Tucson, Arizona

Visual/Spatial Intelligence

Visual/spatial intelligence can be seen in its purest form in the active imagination of children involved in such things as daydreaming, pretending to make themselves invisible, or imagining themselves to be on a great journey to magical times and places. We employ this intelligence when we draw pictures to express our thoughts and feelings, or when we decorate a room to create a certain mood. We use it when we use a map successfully to get someplace we want to go. Visual/spatial intelligence helps us win at chess, enables us to turn a blueprint on paper into a "real" object (for example, a bookshelf or a dress), and allows us to visualize things we want in our lives (for example, new curtains or wallpaper, a successful speech, a trip, a career change, or an award).

Exercises to Stimulate Visual/Spatial Intelligence

- Look at the clouds with a group of friends and see if you can find such things as animals, people, objects, faces, and so on, hidden in the formations.
- Practice excises for using the active imagination; for example, imagine yourself living in a different period of history or pretend you are having a conversation with your hero, a character from literature, or a historical figure.
- Try to express an idea, opinion, or feeling with clay, paints, colored markers, or pens. Use images, shapes, patterns, designs, textures, and colors.
- Plan a scavenger hunt with friends. Make complex and interesting maps of each other to follow that will lead to the "treasure."
- Create a picture montage based on a theme or idea that interests you. Cut out a number of pictures from magazines and arrange them to convey what you want to say.

Bodily/Kinesthetic Intelligence

Bodily/kinesthetic intelligence would be seen in operation if I gave you a typewriter, with no markings on the keys, and asked you to type a letter. If at some time in your life you learned how to type, your fingers would "know" the keyboard and would likely be able to produce the letter with little or no effort at all. The body knows many things that are not necessarily known by the conscious mind, for example, how to ride a bike, park a car, catch an object. Or maintain balance while walking. Bodily/kinesthetic intelligence also involves the ability to use the body to express emotions and thoughts (such as in dance or body language), to play an athletic or sporting game, to invent a new product, and to convey ideas (such as charades, mime, and drama).

Exercises to Stimulate Bodily/Kinesthetic Intelligence

- After a presentation, have everyone in a group express her or his reactions to the presentation through a physical gesture, action, movement, posture, or other body language.
- Pay attention to your body when you are involved in everyday, physical tasks such as shoveling snow, washing dishes, or fixing your car. See if you can become aware of what your body "knows" how to do and how it functions.
- Perform different physical activities, such as walking, dancing, or jogging. Try to match your mood. Also try some activities to change your mood.
- Practice using your nondominant hand to perform any taken-for-granted task, for example, brushing your teeth, eating, buttoning a shirt, and so on. See if you can train the hand to function more effectively.

- Try role-playing to express an idea, opinion, or feeling, or play "Modern-Day Inventions Charades."

Musical/Rhythmic Intelligence

We use our musical/rhythmic intelligence when we play music to calm or to stimulate ourselves. Many of us use music and rhythm to maintain a steady rhythm when jogging, cleaning the house, or learning to type. Musical/rhythmic intelligence is involved when you hear a jingle on the radio and find yourself humming it over and over throughout the day. This intelligence is active when we use tones and rhythmic patterns (instrumental, environmental, and human) to communicate how we are feeling and what we believe (for example the sounds of intense joy, fear, excitement, and loss), or to express the depth of our religious devotion or the intensity of our national loyalty.

Exercises to Stimulate Musical/Rhythmic Intelligence

- Make a list of different types of music you own or have access to. Listen to several minutes of each type and note how each affects you, for example, feelings and images it evokes, memories it sparks, and so on.
- Think of something you want to remember or something you want to teach someone. Choose a well-known tune and create a simple song using the information you want to remember to teach.
- Experiment expressing your feelings (for example, fear, contentment, anger, exhaustion, exhilaration, and so on) through vocal sounds only (no words!). Try producing different volumes, pitches, tones, and noises to communicate your meaning.
- Listen to the natural rhythmic patterns of your environment, for example, coffee brewing, traffic, the wind blowing, rain beating on the window, and so on. See what you can learn from these rhythms and beats.
- Read a story and practice "illustrating" it with various sound effects, music, rhythmic beats, tones—much like the old-time radio shows.

Interpersonal Intelligence

We experience our interpersonal intelligence most directly whenever we are part of a team effort, whether it be a sports team, a church committee, or a community task force. This intelligence utilizes our ability to engage in verbal and nonverbal communication and our capacity to notice distinctions among ourselves, for example, contrasts in moods, temperament, motivations, and intentions. Interpersonal intelligence allows us to develop a genuine sense of empathy and caring for each other. Through our interpersonal intelligence we can "stand in another's shoes" and understand another person's feelings, fears, anticipations, and beliefs. This person-to-person way of knowing is the one through which we maintain our individual identity, but we also become "more than ourselves" as we identify with and become a part of others.

Exercises to Stimulate Interpersonal Intelligence

- Get a partner to try to reproduce a complex shape or design you have drawn. These are the rules: (1) Give verbal instructions only. (2) Your partner may not look at the drawing. (3) Your partner may ask you any question. (4) You may not look at what your partner is drawing.
- Explore different ways to express encouragement and support for other people (for example, facial expressions, body posture, gestures, sounds, words, and phrases). Practice giving encouragement and support to others around you each day.

- Practice listening deeply to someone who is expressing a view with which you disagree. Cut off the tendency to interpret what the person is saying and to express your own views. Force yourself to stay focused on what the person is saying. Try to paraphrase his or her thoughts to verify your own understanding.
- Volunteer to be part of a team and watch for positive and negative team behavior (positive team behavior includes the things that help the team work together and be successful; negative behavior includes the things that impair the team's efforts).
- Try disciplined people-watching, guessing what others are thinking and feeling, their backgrounds, professions, and so on, based on nonverbal clues (for example, dress, gestures, voice tone, colors, and so on). When possible (and appropriate!), check your accuracy with the person.

Intrapersonal Intelligence

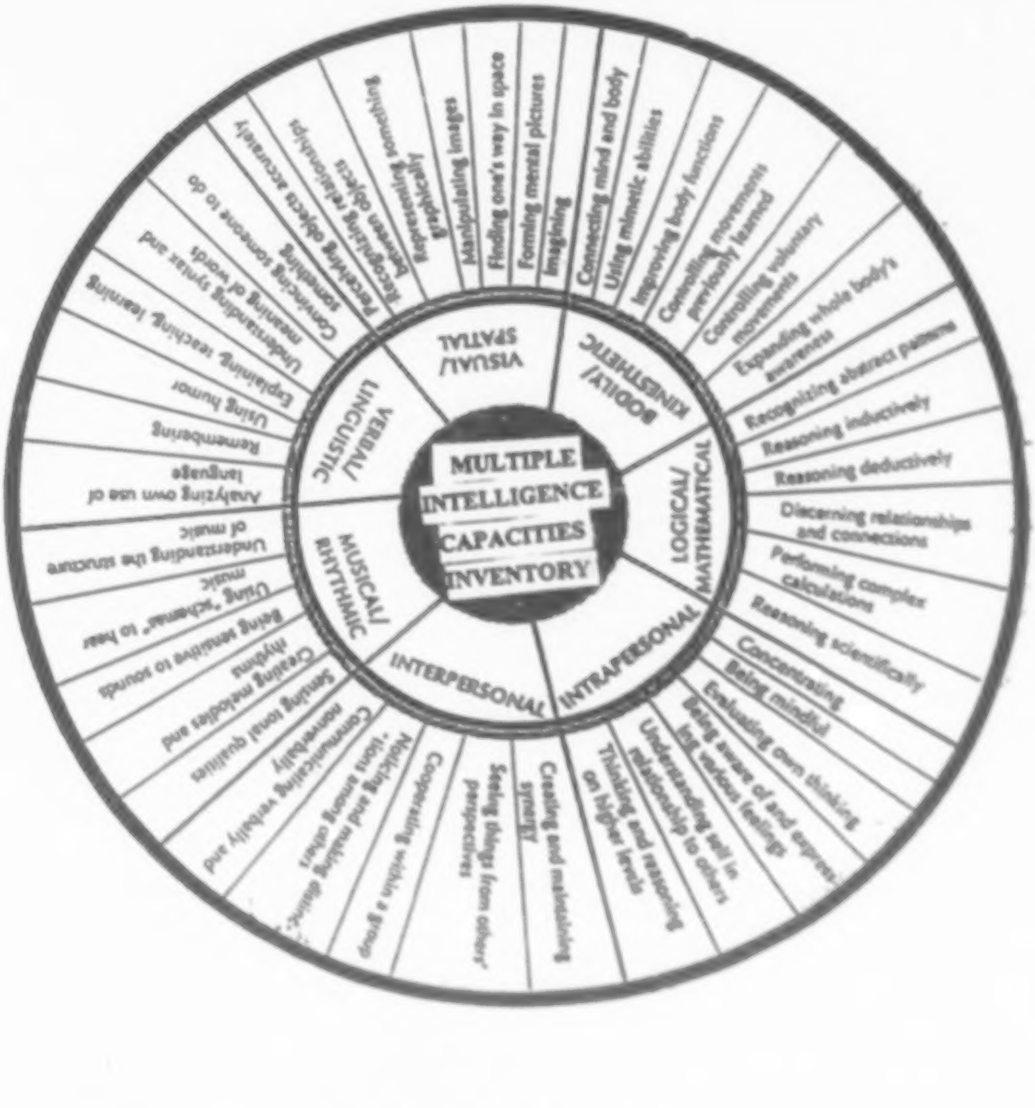
Intrapersonal intelligence is the introspective intelligence. Intrapersonal intelligence allows us to be self-reflective, that is, to step back from ourselves and watch ourselves, almost like an outside observer. As far as we know, we are the only creatures gifted with such an ability. Intrapersonal intelligence involves a knowledge about and an awareness of the internal aspects of the self such as feelings, thinking processes, self-reflection, and intuition about spiritual realities. Both self-identity and the ability to transcend the self are part of the functioning of intrapersonal intelligence. When we experience a sense of unity, have an intuition about our connection with the larger order of things, experience higher states of consciousness, feel the lure of the future, and dream of unrealized potentials in our lives, it is the result of our intrapersonal way knowing.

Exercises to Stimulate Intrapersonal Intelligence

- Make a mood graph that shows the high points (as well as points in between) of your day. Note the external events that contributed to your different moods.
- Evaluate the thinking strategies and thinking patterns you use in different situations (for example, a problem arises in a well-planned activity, and emergency occurs, or you have to decide among a number of viable and attractive options).
- When doing something boring, try to be aware of all aspects of the activity: your movements, feelings, thoughts, the taste in your mouth, the smell in the air, the textures, the sounds, and so on.
- Create an experimental reflection log in which you record key events from your day. Then, using such things as paints, music, clay, and poetry, express your feelings about those events.
- Pretend you are an outside observer watching your thoughts, feelings, and moods. Notice different patterns that seem to arise in certain situations, for example, the "anger pattern," the "playfulness patterns," or the "anxiety pattern."

MULTIPLE INTELLIGENCE CAPACITIES INVENTORY WHEEL

The following diagram includes a summary of the capacities and skills related to each of the intelligences. These skills must be taught explicitly to students if the students are to learn how to use all seven ways of knowing. Just as students must be taught the alphabet, how to make words, and how to read and write if they are to be strong in verbal/linguistic intelligence, they must be taught such things as how to use the active imagination, how to do graphic representation, and how to see relationships between different objects in space if they are to be strong in visual/spatial intelligence. I suggest that you use this wheel as a checklist to evaluate your children's relatives strengths and weaknesses in each intelligence area.


MULTIPLE INTELLIGENCE CAPACITIES INVENTORY
VISUAL/ SPATIAL
Perceiving objects accurately
Recognizing relationships between objects
Representing graphically
Manipulating images
Finding one's way in space
Forming mental pictures
Imagining
BODILY/ KINESTHETIC
Connecting mind and body
Using mimetic abilities
Improving body functions
Controlling movements previously learned
Controlling voluntary movements
Expanding whole body's awareness
LOGICAL/ MATHEMATICAL
Recognizing abstract patterns
Reasoning inductively
Reasoning deductively
Discerning relationships and connections
Performing complex calculations
Reasoning scientifically
INTRAPERSONAL
Concentrating
Being mindful
Evaluating own thinking
Being aware of and expressing various feelings
Understanding self in relationship to others
Thinking and reasoning on higher levels
INTERPERSONAL
Creating and maintaining synergy
Seeing things from others' perspectives
Cooperating within a group
Noticing and making distinctions among others
Communicating verbally and nonverbally
MUSICAL/ RHYTHMIC
Sensing tonal qualities
Creating melodies and rhythms
Being sensitive to sounds
Using "schemas" to hear music
Understanding the structure of music
VERBAL/ LINGUISTIC
Analyzing own use of language
Remembering
Using humor
Explaining, teaching, learning
Understanding syntax and meaning of words
Convincing someone to do something

STRATEGIES THAT REFLECT THE SEVEN INTELLIGENCES

	Motivational[1]	Management	Software[2]
Logical-Mathematical	List or organize facts Sequence numbers Solve problems Analyze data Compute or calculate Solve story problems Play pattern games	List logical consequences of actions Chart the students behaviors Problem solve solutions Count to ten before reacting	Math skills tutorials (Math Blaster) Computer programming tutors (LOGO) Logic games (King's Rule) Science programs (Science Tools Kits) Critical thinking programs (HOTS—Higher Order Thinking Skills)
Linguistic	Write letters, poems, stories, descriptions Lead oral discussions Create audiotapes Give an oral presentation Write or give a news report Conduct an interview Present a radio drama Create a slogan Write your own story problems Tell a story	Talk with students Provide books related to the problem Tell stories that focus on the behavioral issues such as The Boy Who Cried Wolf for fibbing	Word processing programs (WordPerfect) Typing tutors (Mavis Beacon Teaches Typing!) Desktop publishing programs (Publish It!) Electronic libraries (Word Library) Interactive storybooks (Just Grandma and Me) Word games (Missing Links)
Interpersonal	Work on an assignment cooperatively Teach someone else Learn from someone outside of school Consider diverse points of view Establish group rules Act in a play or simulation Conduct an interview Establish "phone buddies" for homework Give feedback to someone else on their work Work on group projects	Provide peer group discussions Buddy up a student with a role model Tutor a younger child Assign different roles such as leading a group	Electric bulletin boards (Kidsnet) Simulation games (Sim City)

	Motivational[1]	Management	Software[2]
Bodily-Kinesthetic	Create a dance or movement sequence Make a board of floor game Make manipulatives Build a model Perform a skit or play Perform a simulation Put together a puzzle Do a scavenger hunt Perform a pantomime Play sports	Role play the appropriate behavior Teach physical clues such as taking a deep breath Use exercise to reduce tension	Hands-on construction kits that interface with computers (LEGO to LOGO) Motion-simulation games (Flight Simulator) Virtual-reality system software (Dactyl Nightmare) Eye-hand coordination games (shufflepuck Café) Tools that plug into computers (Science Toolkit)
Musical	Sing a song Create a rap Compose a melody Change the words to a song Create a musical game Identify music that helps you study Hum a tune Imitate environmental sounds Imitate instrumental sounds	Provide music that calms Use music to reduce tension	Music literature tutors (Exploratorium) Singing software [transforms voice input into synthesizer sound] (Vocalizer) Composition software (Music Studio) Tone recognition and melody Memory enhancers (Arnold) Musical instrument digital interfaces—i.e., MIDI (Music Quest MIDI Starter System)
Naturalist	Create observation notebooks Describe changes in the local or global environment Care for pets, wildlife, gardens, or parks Use binoculars, telescopes, microscopes Draw or photograph natural objects	Discuss examples of cooperation and teamwork in nature	The Magic School Bus Explores the Rainforest; Dangerous Creatures-Explore the Endangered World of Wildlife; Animal Planet

	Motivational[1]	Management	Software[2]
Intrapersonal	Keep a journal, diary, or reflection logs Set short- and long-term goals Explain why and how this topic is important in real life Describe your feeling about this topic Evaluate your own work Describe your personal strengths that help you with this work Carry out an independent project Create your own schedule for completing classwork Use metacognitive techniques	Voluntarily take a time-out Provide one-to-one counseling Design an individual behavioral contract Involve the student in high-interest projects Provide self-esteem activities	Personal choice software (Decisions, Decisions) Career counseling software (The Perfect Career) Any self-paced program (e.g., most of the above programs)
Spatial	Create charts, posters, graphs, diagrams, etc. Make a videotape or film Create pie charts, bar graphs, etc. Make a photo album or scrapbook Create a collage Make a poster or mobile Make a map Use color and shape Make a painting Create a drawing	Draw appropriate behaviors Visualize the consequences of certain behaviors Show pictures or movies that model appropriate behaviors	Animation programs (Art and Film Director) Draw-and paint programs (Dazzle Draw) Electronic chess games (Chessmaster) Spatial problems-solving games (Tetris) Electronic puzzle kit (Living Jigsaws) Clip-art programs (the New Print Shop) Geometry programs (Sensei's Geometry) Graphic presentations of knowledge (World GeoGraph)

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1. Adapted from: Association for Supervision and Curriculum Development. (1994). The multiple intelligences series (2), pp. 74—76. Alexandria, VA: Author.
2. Taken from Armstrong, T. (1994). Multiple intelligences in the classroom. Alexandria, VA: Association for Supervision and Curriculum Development.

Multiple Intelligences Planning Questions

LOGICAL-MATHEMATICAL
How can I bring in numbers, calculations, logic, classifications, or critical thinking skills?

LINGUISTIC
How can I use the spoken or written word?

SPATIAL
How can I use visual aids, visualization, color, art, or metaphor?

OBJECTIVE:

INTRAPERSONAL
How can I evoke personal feelings or memories, or give students choices?

MUSICAL
How can I bring in music or environmental sounds, or set key points in a rhythmic or melodic framework?

INTERPERSONAL
How can I engage students in peer sharing, cooperative learning, or large-group simulation?

BODILY-KINESTHETIC
How can I involve the whole body or use hands-on experiences?

NATURALIST
How can I bring in the discrimination of living things and cultural artifacts?

Armstrong, T. (1994). Multiple intelligences in the classroom (p.58). Alexandria, VA: Association for Supervision and Curriculum Development.

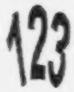
Assessing How Your Students Learn

Instructional Strategy

This checklist, adapted with permission from Multiple Intelligences In The Classroom by Thomas Armstrong (Association for Supervision and Curriculum Development, 1994) can help you take an in-depth look at which intelligences a student uses most. Fill out the checklist for two or three students you have difficulty reaching. For each student in your class check each statement that describes the student, then review them together to see which intelligences are the student's strongest.

Word Smart

___ tells tall tales, jokes, and stories
___ has good memory
___ enjoys word games
___ enjoys reading and writing
___ has a good vocabulary for age
___ has good verbal communication



Number Smart

___ asks questions about how things work
___ quickly does mental math
___ enjoys math activities
___ enjoys strategy games
___ enjoys logic puzzles or brainteasers
___ uses higher-order thinking skills

Picture Smart

___ reports seeing clear mental pictures
___ reads maps, charts, and diagrams easily
___ daydreams more than peers
___ enjoys art activities
___ likes visual presentations
___ enjoys puzzles and mazes
___ understands more from pictures than words while reading
___ doodles on paper

Body Smart

___ excels in one or more sports
___ moves, twitches, taps, or fidgets while seated for a long time
___ enjoys taking things apart and putting them back together
___ touches new objects
___ enjoys running, jumping or wrestling
___ expresses her/himself dramatically
___ enjoys clay and finger painting

Music Smart

___ recognizes off-key music
___ remembers melodies
___ plays a musical instrument or sings in a choir
___ speaks or moves rhythmically
___ taps rhythmically as he or she works
___ is sensitive to environmental noises
___ responds favorably to music
___ sings songs that s/he has learned outside of the classroom

People Smart

___ enjoys socializing with peers
___ acts as a natural leader
___ gives advice to friends who have problems
___ seems to be street-smart
___ belongs to clubs, committees, or other organizations
___ likes to play games with other kids
___ has one or more close friends
___ shows concern for others

Self Smart

___ displays a sense of independence
___ has a realistic sense of his/her strength
___ has a good sense of self-direction
___ prefers working alone to working with others
___ learns from his/her failures and successes
___ has high self-esteem

Activity Planner for Projects Using the Eight Intelligences
THEME

Discipline	Verbal/ Linguistic	Logical/ Mathematical	Musical/ Rhythmic	Visual/ Spatial	Bodily/ Kinesthetic	Interpersonal/ Social	Interpersonal/ Introspective	Naturalist	Assessment

PLANNING FOR THE EIGHT INTELLIGENCES

School District: ____________________

Concept/Topic: ____________________

	LOGICAL/ MATHEMATICAL	LINGUISTIC	INTERPERSONAL	INTRAPERSONAL	SPATIAL	BODILY/ KINESTHEIC	MUSICAL	NATURALISTIC
INSTRUCTIONAL ACTIVITY								
EMPLOYABILITY SKILL								
ASSESSMENT								

SOUTH DAKOTA CAREER CLUSTERS

INTERPERSONAL
LINGUISTIC

DATA

LOGICAL
INTRAPERSONAL

BUSINESS CONTACT

MARKETING AND SALES

Sales workers in stores; route drivers; buyers; travel agents; sales workers who visit customers (real estate & insurance agents; stock brokers; farm products; office and medical supplies sales workers.

MANAGEMENT & PLANNING

Store, motel, restaurant, and agribusiness managers; office supervisors;

BUSINESS OPERATIONS

RECORDS & COMMUNICATIONS

Office, library, hotel, and postal clerks; receptionists; librarians; office, medical, and legal secretaries; court reporters

FINANCIAL TRANSACTIONS

Bookkeepers; accountants; grocery check-out clerks; bank tellers; ticket agents; insurance underwriters; financial analysts

BSNS MACHINE/CMPTER OPERATIONS

Computer console, printer, etc. operators; office machine operators; typists; word-processing equipment operators; statistical clerk

PEOPLE

INTERPERSONAL

SOCIAL SERVICE

GENERAL HEALTH CARE

Nursing aides, dental assistants, licensed practical nurses; physical therapy assistants; registered nurses; dieticians; occupational therapists; physicians; speech pathologists

EDUCATION & RELATED SERVICES

Teacher aides; preschool teachers; athletic coaches; college teachers; guidance/career counselors; elementary & secondary school teachers; special education teachers

SOCIAL & GOVERNMENT SERVICES

Security guards; recreation leaders, police officers, health/safety inspectors, child welfare workers; home economists; rehabilitation counselors; sanitarians; social workers

PERSONAL/CUSTOMERS SERVICES

Grocery baggers; bellhops; flight attendants; waitresses and waiter, cosmetologists; barbers & maids

THINGS

BODY/KINESTHETIC
SPATIAL

TECHNICAL

VEHICLE OPERATION & REPAIR

Bus, truck drivers; mechanics; forklift operators; airline pilots; ship officers

CONSTRUCTION & MAINTENANCE

Carpenters; electricians; painters; bulldozer operators; building inspectors; custodians

AGRICULTURE & NTR'L RESOURCES

Farmers; foresters; ranchers; landscape gardeners; plant nursery workers

CRAFTS AND RELATED SERVICES

Cooks; meat cutters; bakers; shoe repairers; piano tuners; tailors; jewelers

HOME/BSNS EQUIPMENT REPAIR

Repairers of TV sets, appliances, typewriters, telephones, hearing systems, photocopiers, etc.

INDUSTRIAL EQUIP OPERATION & REPAIR

Machinists; printers; welders; industrial machinery repairers; production painters; fire fighters; machine operators

IDEAS

ARTS

APPLIED ARTS (VISUAL)

Floral designers; merchandise displayers; commercial artists; fashion designers; photographers; interior designers; architects; landscape architects

CREATIVE/PERFORMING ARTS

Entertainers, actors/actresses; dancers; musicians; singers; composers; writers; art, music, teachers

APPLIED ARTS

Advertising copywriters; disk jockeys; legal assistants; advertising account executives; interpreters; reporters; public relations workers; librarians; technical writers

SCIENCE

ENGINEERING/OTHER TECHNOLOGIES

Engineers and engineering technicians; lab technicians; computer programmer and technicians; drafters; food technologist

MEDICAL SPECIALIST/TECHNOLOGIES

Dental hygienists; EEG & EKG technicians; opticians; prosthetics technicians; X-ray technologists; dentists; pharmacists; veterinarians

NATURAL SCIENCES & MATHEMATICS

Agronomists; biologists; chemists; mathematicians; physicists; soil scientists

SOCIAL SCIENCES

Marketing research analysts; anthropologists; economists; political scientists; psychologists

SPATIAL
MUSICAL

SPATIAL
LOGICAL

Assessment

ASSESSMENT

THE POOR SCHOLAR'S SOLILOQUY

By Stephen Corey

Professor Corey is an outstanding leader in the field of educational psychology and is now associated with Teachers College, Columbia University. This treatise on educational philosophy brings out an aspect of education which we are all likely to forget at times. Though amusingly written, It strikes deep and hard.

1. No, I'm not very good in school. This is my second year in the seventh grade, and I'm bigger and taller than the other kids. They like me all right, though, even if I don't say much in the classroom, because outside I can tell them how to do a lot of things. They tag me around and that sort of makes up for what goes on in school.

2. I don't know why the teachers don't like me. They never have, very much. Seems like they don't think you know anything unless they can name the book it comes out of. I've got a lot of books in my room at home – books like POPULAR SCIENCE, MECHANICAL ENCYCLOPEDIA, and Sears' and Ward's catalogs – but I don't very often just sit down and read through like they make us do in school. I use my books when I want to find something out like whenever Mom buys anything second hand, I look it up in Sears' and Ward's first and tell her if she's getting stung or not. I can use the index in a hurry.

3. In school, though, we've got to learn whatever is in the book and I just can't memorize the stuff. Last year, I stayed after school every night for two weeks trying to learn the names of the presidents. Of course, I knew some of them like Washington and Lincoln and Jefferson, but there must have been thirty altogether, and I never did get them straight.

4. I'm not sorry though, because the kids who learned the presidents had to turn right around and learn all the vice-presidents! I am taking the seventh grade over, but our teacher this year isn't so interested in the names of presidents. She had us trying to learn the names of all the great American inventors.

5. I guess I just can't remember names in history. Anyway, this year I've been trying to learn about trucks because my uncle owns three and he says I can drive one when I'm sixteen. I already know the horsepower and number of forward and backward speeds of 26 American trucks, some of them diesels, and I can spot each make a long way off. It's funny how the diesel works. I started to tell my teacher about it last Wednesday in science class when the pump we were using to make a vacuum in a bell jar hot, but she didn't see what a diesel engine had to do with our experiment in air pressure so I just kept still. The kids seemed interested though. I took four of them around to my uncle's garage after school and we say the mechanic, Gus, tear a big diesel truck down. Does he know his stuff!

6. I'm not very good in geography either, they call it economic geography this year. We've been studying the imports and exports of Chile all week but I couldn't tell you which they are. Maybe the reason is I had to miss school yesterday because my uncle took me and his big

trailer down state about 200 miles and we brought almost 10 tons of stock back to the Chicago market.

7. He had told me where we were going, and I had to figure out the highways to take and also the mileage. He didn't do anything but drive and turn where I told him to. Was that fun! I sat with a map in my lap and told him to turn south, or southeast or some other direction. We made seven stops and drove over 500 miles round trip. I'm figuring now what his oil cost and also the wear and tear on the truck (he calls it depreciation) so we'll know how much we made.

8. I even write out all the bills and send letters to the farmers about their pigs and beef cattle brought at the stockyards. I only make three mistakes in 17 letters, my aunt said – all commas. She's been through high school and she reads them over. I wish I could write school themes that way. The last one I had to write was on "What a Daffodil Thinks of Spring," and I just couldn't get going.

9. I don't do very well in school in arithmetic either. Seems I just can't keep my mind on the problem. We had one the other day like this:

> "If a 57 foot telephone pole falls across a cement highway, so that 17 13/16 feet extend from one side and 14 9/17 feet from the other, how wide is the highway?"

That seemed to me like an awfully silly way to get the width of the highway. I didn't even try to answer it because it didn't say whether the pole had fallen straight across or not.

10. Even in shop I don't get good grades. All of us kids made a broom holder and even a bookend this term, and mine were sloppy. I just couldn't get interested. Mom doesn't use a broom any more. She has a new vacuum cleaner and all our books are in a bookcase with glass doors in the parlor. Anyway, I wanted to make an end-gate for my uncle's trailer, but the shop teacher said that meant using metal and wood both, and I'd have to learn how to work with wood first. I didn't see why, but I kept still and made a tie rack at school and the tail gate after school at my uncle's garage. He said I saved him ten dollars.

11. Civics is hard for me too. I've been staying after school trying to learn the "Articles of Confederation" for almost a week because the teacher said we couldn't be good citizens unless we did. I really tried because I want to be a good citizen. I did hate to stay after school, through, because a bunch of us boys from the south end of town have been cleaning up the lot across from Taylor's machine shop to make a playground out of it for the little kids in the Methodist home. I made a jungle gym from old pipe and the guys made me Grand Mogul to keep the playground going. We raised enough money collecting scrap this month to build a wire fence clear around the lot.

12. Dad says I can quit school when I am fifteen, and I am sort of anxious to because there are a lot of things I want to learn how to do, and as my uncle says, "I'm not getting any younger."

What Is Assessment?

- A demonstration of learning
- Evidence of skill and process development
- Evidence of conceptual insight
- Evidence of knowledge acquisition
- Evidence of growth or progress over time
- Evidence whether standards have been met

Assessment

Assesment

ASSESSMENT: process of gathering evidence (not just paper and pencil)

EVALUATION: process of interpreting that evidence and making judgments and decisions based on that evidence

AUTHENTIC ASSESSMENT:

- linkage among learning tasks and performance tasks
- part of instruction
- meaningful tasks
- multiple assessments
- over time and ongoing

Therefore:
- greater reliability
- greater validity

BLOOM'S TAXONOMY

Levels and Words Associated with Questioning

EVALUATION:	judge	decide	appraise	evaluate
	rate	compare	value	revise
	conclude	select	criticize	assess
	measure	estimate	infer	deduce
	score	predict	choose	determine
	recommend			
SYNTHESIS:	compose	plan	propose	produce
	invent	develop	design	formulate
	arrange	assemble	construct	create
	set up	prepare	imagine	predict
	hypothesize	incorporate	generalize	contrive
	incorporate	originate	systematize	concoct
ANALYSIS:	interpret	analyze	contrast	scrutinize
	categorize	probe	test	investigate
	discover	inquire	detect	compare
	classify	arrange	group	organize
	examine	survey	dissect	inventory
	question	diagram	inspect	distinguish
	differentiate			
APPLICATION:	exhibit	solve	interview	apply
	employ	experiment	practice	show
	use	illustrate	dramatize	operate
	calculate	simulate	demonstrate	
COMPREHENSION:	restate	summarize	discuss	describe
	recognize	explain	express	identify
	locate	report	retell	review
	translate			
KNOWLEDGE:	know	define	memorize	repeat
	record	list	recall	name
	relate	collect	label	specify
	cite	enumerate	tell	recount

Typical Tests vs "Authentic" Tests

Typical Test	"Authentic" Test	Indicators of Authenticity
Requires 'correct' responses	Requires judgement, method, refinement, accuracy, and justified responses	We observe and assess whether the student is in control of the "process" and the "product" in terms of the depth and quality of the work – not just correctness of answers
Must be unknown in advance to insure validity	Known as much as possible in advance; the "test" involves excelling at known, difficult tasks	The tasks, criteria and standards by which work will be judged are predictable or known – like the recital piece, the play, the game, a graduate oral exam, engines to be fixed, reports to be written and presented, proposals to a client, etc.
Disconnected from a realistic context	Effective use of the knowledge required: the student must "do" history, science, etc. in a rich and realistic simulation	A question likely to be encountered as experienced by the professional, citizen or consumer – as know-how in use, embedded in a set of performance obligations
Requires recognition of one 'correct answer' or plugging-in of one skill or theory	Knowledge tested as know-how; effectiveness in fashioning a quality product or performance	The task is multi-faceted and complex. Even if there is a "right answer," the task requires problem clarifying, planning, trial and error, research, adapting the facts to the case at hand, etc.
Simplistic - faster to score	Essential and judgement-based	Involves core challenges, not the easily-scored; requires careful judgement in scoring
Superficial	In-depth	Reveals whether the student has achieved real versus pseudo-mastery
Indirect 'proxy' for authentic challenges	Authentic simulation, engaging, educative, and meaningful	Thought-provoking and realistic; evokes student engagement and persistence

From: "Teaching the SCANS Competencies"

FRAMEWORK OF ASSESSMENT APPROACHES AND METHODS

How might we assess student learning in the classroom?

SELECTED RESPONSE ITEMS	PERFORMANCE-BASED ASSESSMENTS			
	CONSTRUCTED RESPONSES	PRODUCTS	PERFORMANCES	PROCESS-FOCUSED

▪ multiple-choice
▪ true-false
▪ matching
	▪ fill in the blank
	  ▪ word(s)
	  ▪ phrase(s)
	▪ short answer
	  ▪ sentence(s)
	  ▪ paragraphs
	▪ label a diagram
	▪ "show your work"
	▪ visual representation
	  ▪ web
	  ▪ concept map
	  ▪ flow chart
	  ▪ graph/table
	  ▪ matrix
	  ▪ illustration
		▪ essay
		▪ research paper
		▪ log/journal
		▪ lab report
		▪ story/play
		▪ poem
		▪ portfolio
		▪ art exhibit
		▪ science project
		▪ model
		▪ video/audiotape
		▪ spreadsheet
			▪ oral presentation
			▪ dance/movement
			▪ science lab demonstration
			▪ athletic competition
			▪ dramatic reading
			▪ enactment
			▪ debate
			▪ musical recital
				▪ oral questioning
				▪ observation ("kid watching")
				▪ interview
				▪ conference
				▪ process description
				▪ "think aloud"
				▪ learning log

Assessment Methods & Products

- autobiographies
- advertisements
- directions/manuals
- biographies
- checklists
- essay tests
- essays
- fill in the blank test
- journals
- literary analysis
- demonstration
- I search papers
- magazine/news articles
- matching quizzes/tests
- multiple choice quizzes/tests
- outlines
- poetry
- research papers
- response papers
- reviews
- scripts
- short answer exams
- summaries
- worksheets
- written critiques
- debates
- conferences
- dramatizations
- discussions
- invention
- role playing
- interviews
- oral critiques
- photo essay
- oral reports
- poetry readings
- presentations/speeches
- storytelling
- computer graphics
- broadcasts
- travel brochure
- computer programs
- computer simulations
- multimedia presentations
- recordings
- spreadsheets
- videotapes
- cartoons
- collages
- dioramas
- drawings
- performances (music, dance, etc.)
- sculptures
- illustrations
- case studies
- budgets
- collections
- concept mapping
- charts/graphs
- timelines
- displays
- pamphlets
- experiments
- games
- group projects
- flowcharts
- mathematical models
- models
- observation
- portfolios
- proposals
- rating scales
- scale drawings
- puzzle
- recipe

This list includes written, oral, creative, electronic and other methods/tools of assessment. It is NOT meant to be an all inclusive list.

MULTIPLE INTELLIGENCES
COULD INCLUDE THE FOLLOWING ACTIVITIES AND ASSESSMENTS*:

Verbal/ Linguistic	Logical/ Mathematical	Visual/Spatial	Bodily/ Kinesthetic	Musical/ Rhythmic	Interpersonal	Intrapersonal
▪ computer printouts ▪ tape recordings of readings ▪ reactions to guest speakers ▪ autobiographies ▪ biographies ▪ mnemonics ▪ reactions to films or videos ▪ scripts for radio shows ▪ captions for cartoons ▪ student-made bulletin boards ▪ list of books read ▪ annotated bibliographies	▪ puzzles ▪ problems solved on calculators ▪ patterns and their relationships ▪ lab experiments ▪ mathematical operations ▪ formulas/abstract symbols ▪ analogies ▪ time lines ▪ outlines ▪ Venn diagrams ▪ computer games ▪ original word problems ▪ mind maps	▪ artwork ▪ photographs ▪ math manipulatives ▪ graphic organizers ▪ posters, charts, graphics, pictures ▪ illustrations ▪ sketches ▪ drawings ▪ paintings ▪ props for plays ▪ demonstrations ▪ use of overhead or black board ▪ storyboards	▪ field trips ▪ role playing ▪ learning centers ▪ labs ▪ outdoor education ▪ environmental studies ▪ sports/games ▪ cooperative learning ▪ exercise breaks ▪ stretching ▪ simulations ▪ interviews ▪ projects ▪ presentations ▪ dances	▪ background music in class ▪ songs for books, countries, people ▪ raps, jingles, cheers, poems ▪ musical mnemonics ▪ choral reading ▪ tone patterns ▪ music and dance of different cultures ▪ musical symbols	▪ group video, film, filmstrip ▪ team computer programs ▪ think-pair-share ▪ cooperative task trios ▪ round robin ▪ jigsaw ▪ wraparounds ▪ electronic mail ▪ group songs, collages, poems ▪ rating scales ▪ class and group discussions ▪ group projects ▪ group presentations	▪ problem-solving strategies ▪ goal setting ▪ reflective logs ▪ divided journals ▪ metacognitive reflections ▪ independent reading time ▪ silent reflection time ▪ concentration exercises ▪ self-evaluation ▪ visualization ▪ self-discovery

*Many activities and assessments overlap into several intelligences.

Adapted from *If the Shoe Fits…: How to Develop Multiple Intelligences in the Classroom* (Chapman, 1993)

Multiple Intelligence Assessment Menu

Verbal-Linguistic Intelligence

(Language Arts-Based Assessment Instruments)

- written essays
- vocabulary quizzes
- recall of verbal information
- audiocassette recordings
- poetry writing
- linguistic humor
- formal speech
- cognitive debates
- listening and reporting
- learning logs and journals

Logical-Mathematical Intelligence

(Cognitive Patterns-Based Assessment Instruments)

- cognitive organizers
- higher-order reasoning
- pattern games
- outlining
- logic and rationality exercises
- mental menus and formulas
- deductive reasoning
- inductive reasoning
- calculation processes
- logical analysis and critique

Visual-Spatial Intelligence

(Imaginal-Based Assessment Instruments)

- murals and montages
- graphic representation and visual illustrating
- visualization and imagination
- reading, understanding, and creating maps
- flowcharts and graphs
- sculpting and building
- imaginary conversations
- mind mapping
- video recording and photography
- manipulative demonstrations

Bodily-Kinesthetic Intelligence

(Performance-Based Assessment Instruments)

- lab experiments
- dramatization
- original and classical dance
- charades and mimes
- impersonations
- human tableaux
- invention projects
- physical exercise routines and games
- skill demonstrations
- illustrations using body language and gestures

Musical-Rhythmic Intelligence

(Auditory-Based Assessment Instruments)

- creating concepts songs and raps
- illustrating with sound
- discerning rhythmic patterns
- composing music
- linking music and rhythm with concepts
- orchestrating music
- creating percussion patterns
- recognizing tonal patterns and quality
- analyzing musical structure
- reproducing musical and rhythmic patterns

Interpersonal Intelligence

(Relational-Based Assessment Instruments)

- group "jigsaws"
- explaining to or teaching another
- "think-pair-share"
- "round robin"
- giving and receiving feedback
- interviews, questionnaires, and people searches
- empathic processing
- random group quizzes
- assess your teammates
- test, coach, and retest

Intrapersonal Intelligence

(Psychological-Based Assessment Instruments)

- autobiographical reporting
- personal application scenarios
- metacognitive surveys and questionnaires
- higher-order questions and answers
- concentration tests
- feelings diaries and logs
- personal projection
- self-identification reporting
- personal history correlation
- personal priorities and goals

Celebration of Learning
Student Sign-up Sheet

To show that I know ______________________________, I would like to:

________ write a report
________ do a photo essay
________ compile a scrapbook
________ build a model
________ put on a live demonstration
________ create a group project
________ do a statistical chart
________ develop an interactive computer presentation
________ keep a journal
________ record interviews
________ design a mural
________ create a discography based on the topic
________ give a talk
________ develop a simulation
________ create a series of sketches/diagrams
________ set up an experiment
________ engage in a debate or discussion
________ do a mind-map
________ produce a videotape segment
________ develop a musical
________ create a rap or song that encompasses the topic
________ teach it to someone else
________ choreograph a dance
________ develop a project not listed above: ______________________________
________ other: ______________________________

Brief description of what I intend to do:

____
Signature of Student Date

____
Signature of Teacher Date

Armstrong, T. (1994). Multiple intelligences in the classroom (p.125). Alexandria, VA: Association for Supervision and Curriculum Development.

Assessment

A **rubric** is an established set of criteria for scoring or rating students' performance on products, writing samples, or other performance tasks.

TYPES OF RUBRICS

HOLISTIC

A single overall score is assigned to a performance task

ANALYTICAL

Several dimensions of traits of a task are scored

HOW DO YOU CREATE RUBRICS?

1. Brainstorm a list of criteria that indicate quality work
2. Decide if the rubric will be holistic or analytical
3. Write short descriptive statements
4. Describe the highest and lowest levels of quality, then fill in the middle levels
5. Try out the rubric on models of student work
6. Revise rubric descriptors if needed
7. Train for rater consistency

WHY USE RUBRICS?

RUBRICS:

- Make expectations clear
- Help students become more thoughtful judges of the quality of their own work
- reduce the amount of time teachers spend evaluating student work
- allow for gradations of quality and heterogeneous classes
- are easy to use and explain to both students and parents

Goodrich, H. (December 1996/January 1997). "Understanding rubrics." Educational Leadership, pp. 14-17.

RUBRIC

Generic Performance Level for Declarative Knowledge	Generic Performance Level for Procedural Knowledge
Advanced performance: demonstrates a thorough understanding of the important information; is able to exemplify that information in detail and articulate complex relationships and distinctions	carries out the major processes/skills inherent in the procedure with relative ease and automaticity
Proficient performance: demonstrates an understanding of the important information; is able to exemplify that information in some detail	carries out the major processes/skills inherent in the procedure without significant error, but not necessarily at an automatic level
Basic performance: demonstrates an incomplete understanding of the important information, but does not have severe misconceptions	makes a number of errors when carrying out the processes and skills important to the procedure, but still accomplishes the basic purpose of the procedure
Novice performance: demonstrates an incomplete understanding of the important information along with severe misconceptions	makes so many errors when carrying out the processes and skills important to the procedure that it fails to accomplish its purpose

FORM FOR CREATING A SAMPLE *RUBRIC* FROM A *CHECKLIST*

(What I'm looking for…) (The level at which my students need to perform……..)

CRITERIA (Main points/characteristics you valued from the student work) *Should define each area….* Keep information short and to the point.	**____pts.** (What I need to do to perform at this level.)	**____pts.** (What I need to do to perform at this level.)	**____pts.** (What I need to do to perform at this level.)	**____pts.** (What I need to do to perform at this level.)
--	☐	☐	☐	☐
--	☐	☐	☐	☐
--	☐	☐	☐	☐
--	☐	☐	☐	☐
Total				

Score: (Total points) ________

Range for grade: A = __________

B = __________

C = __________

Redo ____ ?? ____

Developed by SERVE
Wendy McColskey and Nancy McMunn--1996

ALTERNATIVE ASSESSMENT RUBRIC

Computer History Project

_________ Report (15 points)

- Three different sources using the computer - example: Encarta, Grolier's, Internet (3 points)
- Print out the sources and attach to report (3 points)
- Two pages on MicroSoft Word, 1.5 line spacing (2 points)
- New York font, 12 point size (2 points)
- 1" margins on all sides (1 point)
- Title page with the title of reports, name, and date (2 points)
- Grammar check using grammar check on the computer (1 point)
- Spelling check using the computer (1 point)

_________ Presentation (25 points)

ORAL

- 5 minutes (5 points - 1 point per minute)
- Note cards (1 point)
- Eye contact (1 point)
- Posture and tone (1 point)

POWER POINT

- Ten slides (5 points - half point per slide)
- Quick time movie on one page (1 point)
- Graphics on six slides (3 points - half point per slide)
- Clear fonts and styles (2 points)
- Follows oral presentation (2 points)
- Has name and title on the first slide (2 points)
- Colorful and eye catching (1 point)
- No spelling errors (1 point)

_________ Total project - 40 points possible

This assessment will be given to the students when the project is assigned. A similar one will be used for final grading.

SCORING RUBRIC FOR COOKBOOK PROJECT

Name ______________________

SCORE: (Total Points) ______________________

Date ______________________

RANGE FOR GRADE:
A=28-30
B=26-27
C=24-25
REDO=23 and below

MARKETABLE PRODUCTS	2	1	0
Overall Appearance	Very Neat	Neat	Messy
Table of Contents	Logical Organization	Satisfactory Organization	No Organization
Index	Logical Organization	Satisfactory Organization	No Organization
Cover/Division Pages	Logical Organization	Satisfactory Organization	No Organization
Creativity	Individual Touches Added	Some Attempt to Individualize	No Individualization
Demonstrates Computer Knowledge	Complete Understanding	Minimal Understanding	No Understanding
CONTENT	2	1	0
Data Collection (per division)	75 or More Recipes	50-74 Recipes	Less Than 50 Recipes
Grammar	Very Good	Some Inadequacies	Unsatisfactory
Mathematical Measurements	Clear and Concise	Some Inadequacies	Unsatisfactory
Documentation	Acknowledgements Listed	Some Inadequacies	Unsatisfactory
Editing	Well Edited	Some Surface Errors	Unsatisfactory
Individual Recipe Directions	Stated in Clear Manner	Some Inadequacies	Unsatisfactory
GROUP WORK	2	1	0
Individual Preparation	Well Prepared for Group Work	Some Inadequacies	Unsatisfactory
Individual Task Completion	On Time and With Quality	Some Inadequacies	Unsatisfactory
Group Participation	Constructive	Some Inadequacies	Unsatisfactory

ORAL REPORT RUBRIC

Assesment

Name ______________________________

Body Language:

Presenter was:
2 ☐ Very confident
1 ☐ Somewhat confident
0 ☐ Not at all confident

Eye Contact:

Established eye contact with audience:
2 ☐ Yes, consistently
1 ☐ Yes, sometimes
0 ☐ No, not at all

Introduction:

Captured the attention of the audience:
2 ☐ Very effectively
1 ☐ Somewhat effectively
0 ☐ Not at all effectively

Projection:

Strong:
2 ☐ Yes
1 ☐ No, needs improvement

Presenter Added Variety by:

Varying Pitch:
1 ☐ Yes
0 ☐ No, needs improvement

Using descriptive/vivid words and phrases:
1 ☐ Yes
0 ☐ No, needs improvement

Demonstrated Planning By:

Using visuals effectively:
1 ☐ Yes
0 ☐ No, needs improvement

Using notecard (if needed):
1 ☐ Yes
0 ☐ No, needs improvement

Allotted time:
1 ☐ Yes
0 ☐ No

Content:

Organized:
2 ☐ Very much
1 ☐ Somewhat
0 ☐ Not at all

Editing:
2 ☐ Very Strong
1 ☐ Somewhat strong
0 ☐ not at all strong

Answer Questions:
2 ☐ Very well
1 ☐ Somewhat
0 ☐ Not at all

Teacher comments:

Assessment Points:
18-17 A
16-15 B
14 C
13 Redo

Training Information

TRAINING INFORMATION

INTEGRATION OF ACADEMIC AND TECHNICAL EDUCATION
TRAINING AGENDA*

*This is a suggested agenda/format to use for a two day training session. Please use as a planning tool, adapting where appropriate. The schedule listed below is a six hour session per day.

INTEGRATED TEACHING AND LEARNING: A FIRST LOOK

A. OPENING 30 minutes

1. Welcome/Facilitator Introductions
2. Housekeeping Issues - College credit information, breaks, etc.
3. Participants Introductions

PROCEDURE: Venn Diagram - Logical/Mathematical Intelligence - see attached format, pages 122-124. Components of the diagram: Academic Instructor, Technical Instructor, Completion of an Integrated Project or Unit.

4. Explanation/Distribution of AHA Cards

PROCEDURE: AHA Cards - Naturalist Intelligence - see information in this section, pages 125-126. These cards are to be used throughout the training for participants to note items that caused them to think "aha" - I may be able to use that - or - I want to remember this. Individuals will be asked to share their "aha's" at the end of each day's session.

B. SETTING THE STAGE 30 minutes

1. Overview of Agenda/Topics - Distribution of Integration Manual
2. Guiding Questions for the Workshop (Verbal/Linguistic Intelligence)

   How can we design curriculum, assessment, and instruction to improve student performance?

3. Essential Questions for the Day

   1. What is meant by integrated teaching and learning?
   2. Why integrate? What are the benefits?
   3. What are the components?
   4. How do we start?

4. The Need for Change

PROCEDURE: Group Discussion/Activity. (Bodily/Kinesthetic Intelligence). Purpose is to introduce the concept of change and to identify principles of change that apply to classroom learning and teaching methodology. See information in this section for instructions on conducting the activity, page 127.

OR

PROCEDURE: Have CHANGE written vertically on flip chart paper. (Have as many sheets as teams) The teams are then to think of their schools or communities reaction to the word change and write a word that starts with each of the six letters. This is a good introductory and self-reflective activity that may indicate conditions and/or barriers.

Refer to the Career Information section in the manual, pages 6-24, for information regarding future trends.

A short video on workforce trends and/or an overview of Tech Prep could be shown during this segment. See the Resource section of this manual. (Visual/Spatial Intelligence)

BREAK **15 minutes**

5. What is Integrated Teaching and Learning for your school (team)? **1 hour**

PROCEDURE: Activity - Bag of Knowledge. See instructions in this section, page 127. (Verbal/Linguistic, Interpersonal, Intrapersonal, Bodily/Kinesthetic, Logical/Mathematical Intelligences). Small groups will respond to the following questions:

1. What is your definition of the integration of academic and technical curriculum?
2. Why integrate? What are the benefits?
3. What are the barriers to integration?
4. What are the conditions that support integration?
5. What are some models of integration? Pros? Cons?

Small groups will report out to the large group. Reports will be written on flip chart sheets to post. Facilitator will support comments with transparencies from manual or from other sources.

6. Video-Integrating the Curriculum - by Heidi Hayes Jacobs. Show the first 11 minutes.

7. Project Showcase - **1 hour**

PROCEDURE: A presentation by a school team who has implemented an integrated project. (Interpersonal intelligence) The team will describe their project, the procedure used for implementation, what went well, and barriers they encountered. Time should be allowed for questions by the participants.

LUNCH **45 minutes**

C. INTEGRATION - PLANNING AND DEVELOPMENT 2 hours

Materials Needed: Post-it notes (6-9 different colors), flip charts for each group, marking pens. Music (suggestion of Mozart) may be played during this session. (Musical intelligence)

METHOD: This segment follows the basic format of a brief overview of each topic/section, followed by small group application.

1. Curriculum Mapping and Alignment

PROCEDURE: Small group activity. (Visual/Spatial intelligence) Using post-it notes (a different color for each individual), each participant lists topics that will be covered in their particular course over a 5-9 week time frame. Post-it notes are aligned vertically by subject area on the flip chart, horizontally by time frame. See curriculum alignment form in Curriculum Alignment section of manual, pages 44-48.

2. Concept Identification

See pages 130-131 for example of project and format:
PROCEDURE: Small group discussion as to possible concept(s) that would serve as an integrating lens for the project (Interpersonal intelligence). Refer to Concepts section of manual for supporting information, pages 49-53. Begin completing project map on page 130.

3. Theme Identification

PROCEDURE: Small group discussion as to possible unit theme/topic. (Interpersonal intelligence.) Keep in mind the theme is the tool that helps students and staff see the relationship (connection) of those concepts. See page 54.

4. Project Rationale/Goal Statement

PROCEDURE: Participants prepare a project rationale incorporating the identified theme/topic and concept(s) (Interpersonal intelligence). The rationale should describe what students will know and be able to do at the completion of the project. See Rationale section of manual for supporting information, page 55.

5. Essential Questions

PROCEDURE: Small group activity to identify 3-5 "essential" questions that will further focus the study. These questions usually begin with "how," "why," and "what." See Essential questions section of manual for supporting information, page 56-57.

6. Instructional Strategies

PROCEDURE: Allow a short time for brainstorming of possible instructional strategies (Interpersonal intellegence). See pages 73-80.

7. Group Reports

PROCEDURE: Team reports identifying their projects theme/topic, concept, project rationale, essential questions and possible instructional strategies. (Interpersonal intelligence).

Group sharing of "aha's" from the training topics.

EVALUATION

INTEGRATED TEACHING AND LEARNING: ANOTHER LOOK

*This agenda is for a six hour session - part two of a twelve hour training session.

A. OPENING 30 minutes

1. Housekeeping

2. Ice Breaker - Career Keno

PROCEDURE: See copy and instructions in this section, page 129 (Interpersonal, Bodily/Kinesthetic, Visual/Spatial intelligence).

Or

Ice Breaker – Traveler Aha's

PROCEDURE: Have teams share Aha's they experienced while traveling to and from the integration training sessions.

Or

PROCEDURE: Have participants introduce themselves by sharing their answers to "What is the last thing you learned how to do; how did you learn it?" This illustrates people's varied learning styles.

3. Review of Agenda/Purpose

Following are the essential questions that will be addressed as part of this session.

1. What assessment strategies can be applied to our project?
2. What instructional strategies can be used?
3. How are individual learning styles addressed?
4. How do we implement our project?

4. Distribution of AHA Cards (Naturalist intelligence)

B. REVIEW OF INTEGRATION BASICS 30 minutes

*This section is intended for review. Following are suggestions for activities that could be used.

1. Integration Review

PROCEDURE: Small group activity. Bag of Knowledge. Each team draws one card (question) from the bag and discusses the question drawn. (Have as many cards as teams) (Interpersonal intelligence). Small groups will report back to the large group.

a. What is integration?
b. What is the most important benefit of integration?
c. What is the largest barrier? How could it be overcome?
d. What model of integration would work best for our district?

e. What condition is the most essential for effective integration to occur?

2. **Video – Planning Integrated Units –** ***A Concept Approach*** featuring Lynn Erickson, published by ASCD (Visual/Spatial intelligence) This video is available through the Technical Education Resource Center.

BREAK **15 minutes**

D. INSTRUCTIONAL STRATEGIES AND MULTIPLE INTELLIGENCES 1 hour

1. Presentation - Overview of Topic

2. Assessing How Your Students Learn

PROCEDURE: Individual Activity (Intrapersonal intelligence) Participants will complete "Assessing How Your Students Learn" from Instructional Strategies section that is provided in the manual on page 91using the following rating scale:

1 - always like me
2 - sometimes like me
3 - never like me

Large group activity: Participants will divide into groups, based on their dominant multiple intelligence (determined from the assessment just completed). Each group answers/presents the following as related to their particular intelligence:

1. Define the intelligence
2. Learn best by…
3. Assessed by…
4. Group t-shirt design

Flip chart paper will be provided to record responses.

3. Planning Instructional Strategies

PROCEDURE: In teams, complete step one of Planning for the Eight Intelligences, page 93.

PROCEDURE: School district teams will plan instructional strategies for their project incorporating activities that address standards and multiple intelligences. See manual pages 80-88. Transfer to project format page 130, substituting more appropriate activities as they surface.

BREAK **15 minutes**

E. INCORPORATING ACADEMIC AND EMPLOYABILITY STANDARDS 30 minutes

1. SCANS/Employability Skills

PROCEDURE: Presentation/Discussion (Interpersonal intelligence) Refer to pages 58-63 from manual. Video - Learning for Earning (Visual/Spatial intelligence) This six minute video is available from the Technical Education Resource Center.

PROCEDURE: Ideas for Integrating Employability Competencies into academic courses. Team Activity. Participants will incorporate these skills in planning for project instructional activities, pages 64-67.

PROCEDURE: Complete step two of Planning for Eight Intelligences, page 92. Transfer to appropriate place on project map page 131.

PROCEDURE: In small groups choose one activity from Toward Active Learning. This publication is also available from the Technical Education Resource Center.

2. Academic Content Standards

PROCEDURE: Presentation/Discussion. Copies of the South Dakota Content Standards in mathematics, language arts, social studies, and science should be available for participants' use.

Participants will determine which academic content standards are incorporated in project activities.

LUNCH **45 minutes**

F. PLANNING FOR ASSESSMENT/RUBRIC DESIGN 1 hour

1. Presentation/Overview

PROCEDURE: In participants original multiple intelligence group, brainstorm for appropriate assessment ideas. Use flip chart paper to record responses.

2. Project Application

PROCEDURE: Complete step three of Planning for Eight Intelligences, page 93

PROCEDURE: Participants will plan assessment activities for their particular course and also for the overall project. Time will be allowed for rubric development. See manual pages 95-113.

3. Group Reports

PROCEDURE: Each school team will give a short overview of their project highlighting the theme, instructional strategies, and assessment methods.

G. ACTION PLAN 30 minutes

PROCEDURE: Using the format from page 132 each school team will review the two day integration training session and devise a plan for implementing within their respective system.

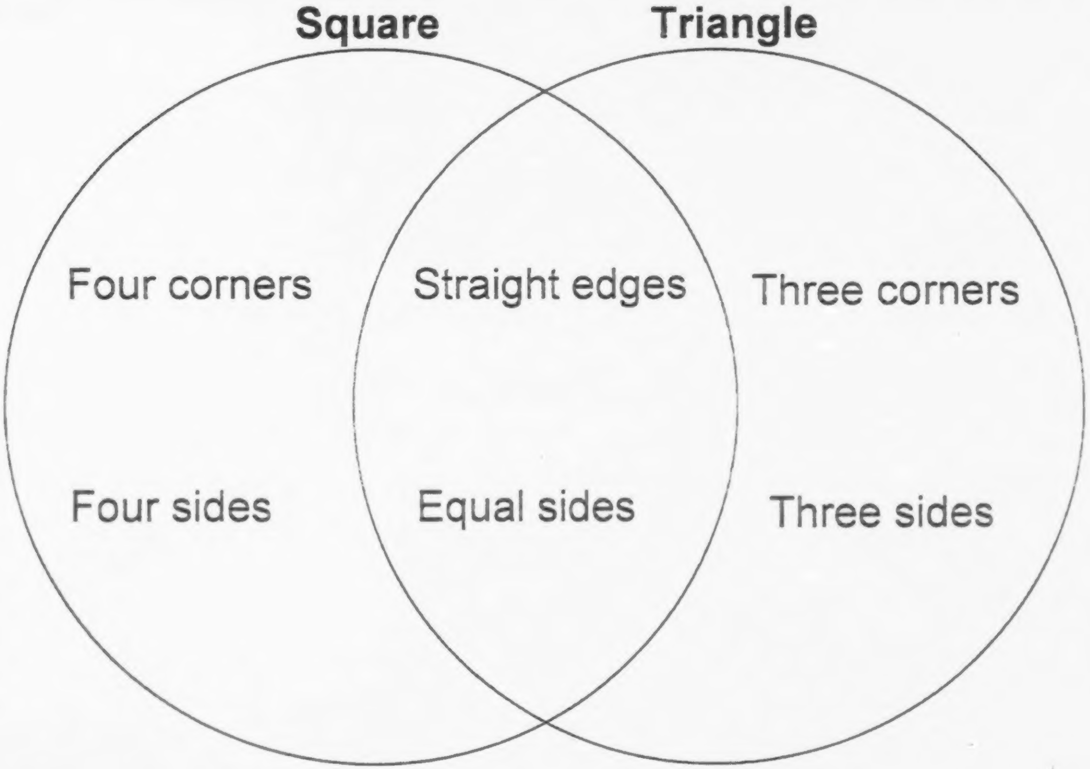
H. CLOSING/EVALUATION 15 minutes

THE VENN

What to Do

- On the board or overhead, display a Venn diagram made of 2 circles.
- Select 2 geometric shapes (e.g., square and triangle).
- Ask students to identify the elements and attributes each has in common, then list these in the area where the 2 circles overlap.
- Ask students to identify the shapes' differences. List unique features of each shape in separate circles.
- Frame a definition of each shape by stressing its unique features.

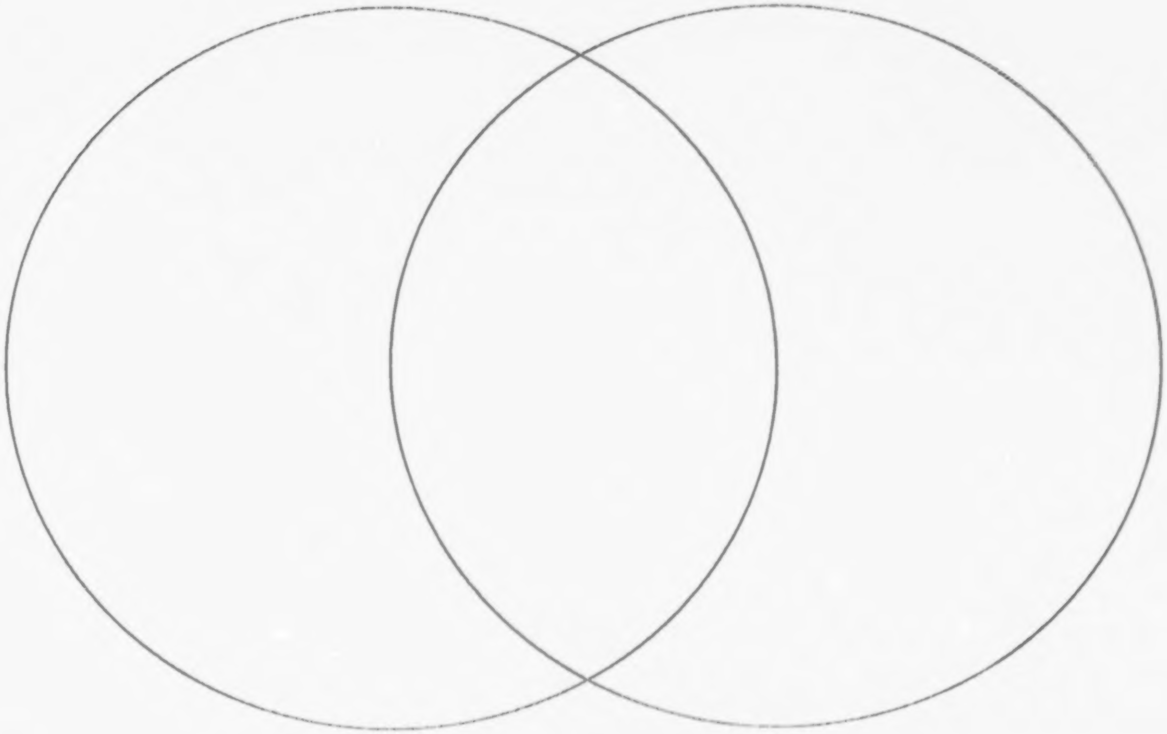
VENN DIAGRAM



Variation

Create Venn diagrams using numerical sets, problem types in mathematics, characters, settings, moods, or styles in literature as well as events, cultures, historic figures, philosophies, or music.

VENN DIAGRAM



AHA! LOG

What to Do

- Introduce students to the notebooks of Leonardo da Vinci or Charles Darwin. (Videotapes about their scientific accomplishments most likely will show how they kept their logs.)
- Ask students to use a notebook to log information during a lab experiment. Instruct students to include the following for each log entry; date, topic of study, sketch or written description of the day's lab topic, notes on procedures used, and at least one "aha!" gained from the experiment. ("Aha," or eureka, refers to an exclamation made when a person discovers something or when a confusing concept or fact suddenly becomes clear.)
- Select 5-6 logs daily to collect and read. Provide brief commentary of feedback.
- At the end of the experiment instruct students to review their logs and make a closing entry about the log process and their own reaction to it. (For example, Describe the most important thing you learned during this process. Has keeping a log been an advantage or disadvantage to you? Why?

Variations

1. Provide opportunities for informal or small group sharing logs throughout the process.
2. Select student sketches and transfer them to overhead transparencies. As a class, discuss strengths of displayed sketches.
3. Use logs during literature or music classes to record "ahas."
4. Introduce by explaining the concept of "ahas," or eurekas and ask students to reflect on prior experiences and recall a significant eureka. Invite students to share their experiences.

Integration of Academic and Vocational Technical Education: Putting the Pieces Together

"A-HA" Card

Use this card to jot down ideas you wish to implement later, things you want to remember, or just something that made you think "A-HA"!!

1.

2.

3.

4.

5.

Integration of Academic and Vocational Technical Education: Putting the Pieces Together

"A-HA" Card

Use this card to jot down ideas you wish to implement later, things you want to remember, or just something that made you think "A-HA"!!

1.

2.

3.

4.

5.

FIVE CHANGES

What to Do

- Use a graphic organizer such as a list or web to identify students' prior knowledge of the concept of change.
- Focus on change as process.
- Divide the class into pairs. Ask partners to spend 1-2 minutes studying each other. Then seat students back to back. Designate an "A" role and a "B" role for each pair.
- Instruct "A" students to make 5 quick changes in their appearance. At the signal, each "A" will turn to student "B" and "B" will try to identify the changes.
- Reverse roles so the "B" students make changes in their appearance and "A" students identify the changes.
- Repeat this process with students making 5 new changes each rotation.
- Form pairs into fours. Ask students to discuss the following questions and record their responses:
  - What was easy about making the changes?
  - What was difficult?
  - What was learned about the change process?

  Compile each group's responses in an all-class 3-column chart.

Easy	Difficult	Learned
1. Easy to guess things like one eye closed. 2. Easy to change body position. 3. Easy to use props like rubber bands.	1. Hard to identify very small changes like a bent finger. 2. Hard to think of a clever change in a hurry.	1. Some changes are obvious, others less so. 2. Changes can be big or small.

- Ask students to formulate generalizations about change based on information in the chart. Form several hypotheses and seek consensus.
- End with individual journal entries that complete lead-in statements such as *I learned…* or *I discovered…*

Variation: Use the chart to structure an essay on the change process.

BAG OF KNOWLEDGE

What to Do

- Give each student a paper lunch bag. List 5 key names, places, events, or concepts from the upcoming lesson.
- On the outside of the lunch bag, invite students to use words, sketches, or symbols to tell 1 thing they already know about each of the key words or concepts listed. Students may leave a blank if they don't have any ideas for a specific word.
- After students have answered the questions, arrange them in small groups of 2-4 and have them share what they wrote or drew. As a class, invite students to share what they know about each example.
- Give each student 5-10 index cards. As the class progresses through the lesson or unit, invite students to write on the cards any new information they learn about the key words or concepts. Students may keep the cards inside their lunch bags. At the end of the lesson, have small groups reconvene and invite students to share their bags of new knowledge.

Variations

- Create an all-class map using the key words.
- Instruct secondary students to create a concept map on their bags.

Career Keno

Your Name: ________________________________

Below are 25 squares, each with a description. At the signal to begin, please move around the room, find individuals who meet each of the descriptions, and ask them to sign their names in the appropriate squares. You should have 25 different signatures on your sheet.

Has worked as a waiter or waitress in college	The career counseling program in your school has an advisory committee	Has worked in a country outside the USA	Uses student portfolios as a tool for career counseling	Within the last 3 years, has been an active member in a professional organization related to counseling and/or careers
Has obtained a graduate degree in counseling	A career development needs assessment has been administered to all students within the last 3 years	Uses creative career counseling techniques to provide career counseling to all students	Worked on an assembly line	Owns your own business
Students are registered by career clusters	Plays an instrument or sings in a choir	Has created a career center	Has been involved in planning my state's school-to-work/tech prep work efforts	Career assessment instruments are administered to students
Regularly uses the computer to provide career development activities	Labor market and occupational information are presented in the classroom	Successful at grant writing	Has talked to parents about the career development needs of their children	Employers are involved as part of the career education program
Utilizes the South Dakota Comprehensive Guidance Model	Is a baby boomer	Has worked for private industry during the last 3 years	Parents/families are involved in the design and implementation of career development activities	Knows a teenager who is not going to college after high school and is searching for an alternative route

Concept - Cause & Effect

Essential Questions

1. What are the causes of flooding of the James River?
2. What effect does this flooding have on Sanborn County? Economically? Socially? Psychologically?
3. How can flood damage be reduced?

Goal Statement:
Students will explain the cause and effect of James River Flooding on Sanborn County.

Theme/Topic

James River Flooding In Sanborn County

Social Sciences

Study the social, economic and psychological effects of flooding on the family.

Technology

Collect data obtained across the disciplines and put into spreadsheet form.

Guidance

Research career opportunities associated with conservation and environmental occupations.

Fine Arts

Photograph the flood stages and develop a slide show with background music.

Science

Study of ecological effects of flooding.

Agriculture

1. Gather and analyze soil and water samples.
2. Research methods of reducing flood damages - such as soil erosion, loss of wildlife, etc.

Business

Monitor legislative activities of flooding prevention and aid to farmers affected by flooding.

Language Arts

Write and present a conservation essay.

Assessment

1. Written and oral presentations.
2. Data analysis and statistical study.

Career Readiness Skills

Basic Skills - Reading, Writing Math

Foundation Skills - Technology Systems, Information, Interpersonal Resources

Concept

Rationale:
Students will

Essential Questions

Theme/Topic

Assessment

Career Readiness Skills

Basic Skills -

Competencies -

ACTION PLAN

GOAL:

Activity	Person(s) Responsible	Time & Date	Resources	Possible Barriers

SEMINAR EVALUATION

I learned...

I liked...

I will...

Comments...

Questions I still have...

Additional training I would like...

Date:

Workshop Title/Location:

Optional:
Name:
Address:
Telephone Number:

Project Examples

EXAMPLES

DESIGNING AND CREATING A MOTORIZED GO-CART

SCHOOL DISTRICT/ADDRESS:
Todd County School District
PO Box 87
Mission SD 57555-0087
856-4457

PARTICIPANTS:
Dr. Richard Bordeaux, Supt.
Janet Henne
Jeff Henne
Dennis Schmaltz
Fred Phillips
Kathleen Selby
Joanne Winter Chaser

SUBJECT/PROGRAM AREA(S):
- Career Guidance
- Mathematics
- Language Arts
- Sciences
- Industrial Technology
- Fine Arts
- Auto Mechanics
- Business/Marketing

PROJECT GOAL: Students will:
Design and create a motorized go-cart.

PROJECT OBJECTIVE(S): Students will:
- understand how to design, plan produce, and market a product;
- work cooperatively;
- evaluate the use of technology to plan, produce, and market a product;
- demonstrate effective verbal skills to promote the product;
- demonstrate effective writing skills to produce a technical manual, instruction manual, operating manual, and research liability factors associated with the sale of product; and
- assess effectiveness of product.

CAREER READINESS/EMPLOYABILITY SKILLS:
- Resources
- Systems
- Interpersonal
- Technology
- Information

CAREER CLUSTERS:
- Technical
- Science
- Art

PROJECT DURATION: One Semester

MATERIALS/RESOURCES:
- Library resources
- Internet access
- Computers
- Interviews
- Video cameras

INSTRUCTIONAL ACTIVITIES: Students will:
- write a technical manual, instructional manual, and operating manual;
- enter data on a computer to design the product and create a blueprint using CAD;
- research liability factors associated with the sale of the product;
- research a recommended type of fuel to be used;
- present speeches to promote the product;
- create a budget with projected costs and comparison pricing;
- devise a marketing plan (advertise and promote product);
- keep a journal;
- conduct a mock interview with a loan officer (entrepreneurship);
- research career areas related to the product;
- design and paint the logo on the product;
- apply mathematics principles during design process; and
- apply auto mechanics principles to determine best power plant, power train, and safest operations.

PROJECT ASSESSMENT:
- Completion of technical, instructional, and operating manuals
- Oral presentation
- Successful completion of product
- Marketing plan

DESIGNING AND BUILDING A HOUSE

SCHOOL DISTRICT/ADDRESS:
Redfield School District
PO Box 560
Redfield SD 57469-0560
472-2315

PARTICIPANTS:
Robert Graham, Supt.
Lynn Brace
Judy Galvin
Cindy Brace
Craig Brooks

SUBJECT/PROGRAM AREA(S):
- Science
- Industrial Arts
- Mathematics
- Language Arts
- Agriculture

PROJECT GOAL: Students will:
Design a house to meet specific budget criteria.

PROJECT OBJECTIVE(S): Students will:
- design an adequate and efficient floor plan with the elements and principles of design observed;
- correctly perform and check the mathematical calculations used by other areas;
- design and calculate the landscape design of the floor plan;
- select the materials needed to build the house and help in the construction;
- assist in selecting materials and helping build the structure; and
- insure that the instructions and reports that are needed have correct spelling and grammar.

CAREER READINESS/EMPLOYABILITY SKILLS:
- Resources
- Systems
- Interpersonal
- Information

CAREER CLUSTERS:
- Science
- Business Operations
- Business Contact
- Arts
- Technical

PROJECT DURATION: One year

MATERIALS/RESOURCES:
- Guest speakers
- Drafting supplies
- Computers
- Resource people from the community
- Building supplies

INSTRUCTIONAL ACTIVITIES: Students will:
- research and design a house using the elements and principles of design;
- select the materials needed to construct the home;
- figure the cost of materials to build the home;
- reevaluate the calculations done by the previous instructional areas;
- design an outdoor landscape for the home and figure its cost; and
- use correct grammar and spelling in all reports.

PROJECT ASSESSMENT:
- Student will be assessed by using the attached Rubric Evaluation Form. Some of the points may vary depending on the individual instructor.

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Project Assessment
(rubric)

A. Correctness of Calculations, Complete (6)
6 – All calculations correct with all work shown.
5 – 1-3 minor errors, or 1 major mistake.
4 – 4-6 minor errors, or 2 major mistakes.
3 – 7-9 minor errors, or 3 major mistakes, or some work missing.
0 – Replace the batteries in your calculator.

B. Neatness of Plan and Adherence to Directions (3)
3 – All directions followed, neat, finished products.
2 – Project not finished in appearance, one or two errors in presentation.
1 – Not neat, pencil marks and erasures.

C. Organization of Packet (3)
3 – Project organized according to directions.
2 – Out of order, or some aspect missing.
1 – Hard to follow, not organized according to directions.
0 – Did you use a blender to organize?

D. Correctness of Measurements (6)
6 – All calculations correct with all work shown.
5 – 1-3 minor errors, or 1 major mistake.
4 – 4-6 minor errors, or 2 major mistakes.
3 – 7-9 minor errors, or 3 major mistakes, or some work missing.
0 – What scale did you use?

E. Practicality of Design (3)
3 – Meets family needs, all aspects work together.
2 – One or two design flaws.
1 – Major design flaw, must be redrawn to be used.
0 – Not designed for human habitation.

BACK TO THE 60'S

SCHOOL DISTRICT/ADDRESS:
DeSmet School District
PO Box K
DeSmet SD 57231
854-3674

PARTICIPANTS:
Donovan Twite, Supt.
Kathy Sanderson
Sharry Knock

SUBJECT/PROGRAM AREA(S):
- Language Arts
- Social Sciences
- Mathematics
- Family and Consumer Sciences
- Fine Arts
- Science
- Agriculture
- Computers
- Business
- Journalism

PROJECT GOAL: Students will:
analyze the upheaval, reform, invention and change of the 60's decade and its impact on today's society.

PROJECT OBJECTIVE(S): Students will:
- gain an understanding that all discipline areas are interrelated and interdependent;
- learn first-hand knowledge of concepts in educational instruction, business practices, medicine, and the impact of the Vietnam war during the 60's decade;
- experience the influence of groups to bring about reform; and
- focus on some aspects of the 60's and correlate how this aspect still has an influence today.

CAREER READINESS/EMPLOYABILITY SKILLS:
- Resources
- Systems
- Interpersonal
- Information

CAREER CLUSTERS:
- Business Contact
- Art
- Business Operations
- Technical
- Science
- Social Services

PROJECT DURATION: Four days

MATERIALS/RESOURCES:
- Record albums from staff
- Videos from school library
- Personal interviews with Vietnam War Veterans, Educators, Medical Personnel, Business People, Psychologists, Sociologist
- Text materials from the State Library, school library, community library
- Clothing from local residents
- Computer software/Internet

INSTRUCTIONAL ACTIVITIES: Students will:
- For all high school students: panel discussion: educator, doctor, banker, veteran; faculty fashion show; student dress-up days; 60's carhop meal; and student protest;
- Band – instrumental music from HAIR;
- History – Vietnam War, Assassinations of Kennedy and King;
- Agriculture – evolution of the industry and farming practices;
- Computer and Spanish – macrame;
- Science – discoveries in medicine;
- Mathematics and Physics – charts and graphs illustrating various aspects of the decade;
- Economics/Business – federal budget;
- Advanced Mathematics – lunar landing;
- English I – research on any aspect of the decade;
- English II – Martin Luther King, Jr. and "I Have A Dream" speech;
- English III – LSD culture, various dance steps that went with the various types of music and lyrics;
- English IV – 2001 Space Odyssey (movie made in the 60's), following discussion of accuracy of movie;
- Sociology – family issues and changes;
- Chorus – swing choir music, entertainment prior to the guest panel;
- Family and Consumer Sciences – talk show format over lifestyle changes; and
- Government – organization of student protest.

PROJECT ASSESSMENT:
- Each instructor determined their own means of assessment for the content presented during the integration project.

A STUDY OF SOUTH DAKOTA

SCHOOL DISTRICT/ADDRESS:
DeSmet School District
PO Box K
DeSmet SD 57231
854-3674

PARTICIPANTS:
Donovan Twite, Supt.
Tony Sturgeon
Sue DeReino
DeSmet Middle School Staff

SUBJECT/PROGRAM AREA(S):
- Agriculture
- Language Arts
- Fine Arts
- Science
- Mathematics
- Social Studies

PROJECT GOAL: Students will:
compare their culture, with the cultures of others, and analyze the diversity of cultures that settled in South Dakota.

PROJECT OBJECTIVE(S): Students will:
- learn some of the major land forms in South Dakota;
- learn how agriculture affected South Dakota;
- learn how soil conservation affects agriculture in South Dakota;
- list major authors from South Dakota and discuss their work;
- describe how L. Frank Baum developed his ideas for the Wizard of Oz;
- discuss ethnic groups in South Dakota;
- name some of the small towns and learn about the ethnic groups that settled here;
- describe the population growth in South Dakota and how it relates to other states; and
- list names and cultured background of some of their ancestors.

CAREER READINESS/EMPLOYABILITY SKILLS:
- Resources
- Systems
- Interpersonal
- Information

CAREER CLUSTERS:
- Business Contact
- Art
- Business Operations
- Technical
- Science
- Social Services

PROJECT DURATION: One week

MATERIALS/RESOURCES:
- Library resources by South Dakota authors
- Maps
- Computer software

INSTRUCTIONAL ACTIVITIES: Students will:
- tour area sites and museums;
- participate in a cultural potluck picnic;
- prepare family trees;
- graph population growth in different areas of South Dakota;
- read books, poems, etc., by authors of South Dakota;
- draw maps;
- listen to guest speakers on South Dakota authors;
- write riddles for towns of South Dakota
- learn the origins of landmark names; and
- study the land forms of South Dakota.

PROJECT ASSESSMENT:
- Journals before and after the project
- Hand drawn map of South Dakota
- Event – cultural picnic

CREDIT CARD COMPETENCIES FOR YOUNG ADULTS

SCHOOL DISTRICT/ADDRESS:
Brookings School District
530 Elm Avenue
Brookings SD 57006
696-4100

East Central Multi District
700 Elm Avenue
Brookings SD 57006
696-4754

PARTICIPANTS:
Orville Creighton, Supt.
Sharon Johnson
Mary Moeller
Joey Fjerstad

Brad Bonde
Kathy Booher

SUBJECT/PROGRAM AREA(S):
- Mathematics
- Language Arts
- Business and Marketing

PROJECT GOAL: Students will:
define what credit is and differentiate rights and responsibilities of using credit.

PROJECT OBJECTIVE(S): Students will:
- become well-adjusted, supportive individuals who accept responsibility and consequences for actions/accomplishments;
- accept the responsibility that accompany individual rights;
- value introspection as important in decision making;
- analyze consequences of personal choices;
- become analytical and creative thinkers who apply a variety of processes, research, methods, and technologies to solve problems; and
- learn about careers related to the credit card industry.

CAREER READINESS/EMPLOYABILITY SKILLS:
- Resources
- Systems
- Interpersonal
- Information

CAREER CLUSTERS:
- Business Operations
- Business Contact

PROJECT DURATION: Two weeks

MATERIALS/RESOURCES:
- Materials from the South Dakota Curriculum Center: *Choices and Decisions: Taking Charge of Your Life: Credit Cards – Living With Plastic; and Credit Card Basics – Play Now, Pay Forever*
- Speakers: local bank credit card division counselors, Special Teams/American Express Human Resource Personnel and Engineers, and Lutheran Social Services Credit Counselor
- Internet
- Magazines
- Newspaper articles
- Credit application forms

INSTRUCTIONAL ACTIVITIES: Students will:

- work in teams of four to scan through an assortment of information relating to credit cards. They will focus on the question, "What do young adults need to know about credit cards in order to use them wisely?" and will compile a list of general topics of interest and importance;
- analyze various credit card applications and determine percentage rate, annual fees, and other costs. They will then determine which card would be better if you carried a balance or paid your credit card in full each month;
- discuss when it is appropriate to use a credit card and when it is better to pay cash;
- discuss the responsibilities of using a credit card;
- select three topics they would be willing to research and develop into an information page for a class booklet on young adult credit card use;
- collect career information as they listen to various guest speakers, tour businesses, and use the library. They will focus on background information relating to careers involved with the credit card industry such as educational requirements, job descriptions, salary ranges, and opportunities involved; and
- use a computer spreadsheet to compute costs of a purchase at various interest rates and lengths of time.

PROJECT ASSESSMENT:

- ➢ Content and grammatical/mechanical quality of information collected
- ➢ Computer spreadsheets
- ➢ Accuracy and completeness of information presented in poster design and content
- ➢ Team presentation skills
- ➢ Application form
- ➢ Informational brochure

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Glossary

GLOSSARY

Basic Skills	*Basic skills* are essential academic and personal abilities that are necessary for success in school and the workplace. Traditionally referred to as the three R's—reading, writing, and arithmetic—in recent times, the term has been expanded by both educators and employers to include a number of cognitive and interpersonal abilities, including the capability to think and solve problems, to communicate information in oral, written, and electronic forms, to work effectively alone and in teams, and to take responsibility for one's own development.
Block Scheduling	*Block scheduling* is a means of reconfiguring the school day. Blocked courses may be scheduled for two or more continuous class periods or days to allow students greater time for laboratory, project-centered work, field trips, or work-based learning.
Career Awareness	*Career awareness activities* generally take place at the elementary level. They are designed to make students aware of the broad range of careers and/or occupations in the world of work, including options that may not be traditional for their gender, race, or ethnicity. Career awareness activities range from limited exposure to the world of work, through occasional field trips and classroom speakers, to comprehensive exposure. The latter may involve curriculum redesign, introduction of students to a wide span of career options, and integration with activities at the middle school level.
Career Clusters Job Families	*Career Clusters* group several careers that are viewed as having a common set of foundation knowledge, skill, and attitudes. South Dakota uses six career clusters; namely, Business Contact, Business Operations, Science, Social Service, Art, and Technical. The clusters incorporate 23 job families which are arranged by work tasks and on data, people, things, and ideas.
Career Days/ Career Fairs	*Career day* activities are designed to help students think about their interests and abilities in relation to potential careers, and to meet people who can assist them in getting the necessary skills and experience for workforce success.
Career Development	*Career development* is the process through which an individual comes to understand his/her place in the world of work. Students develop and identify a career area through a continuum of career awareness, career exploration, and work exposure activities that help them discern their own career area.
Career Exploration	*Career exploration* generally takes place at the middle school level and is designed to provide some in-depth exposure to career options for students. Activities may include the study of career opportunities in particular fields to identify potential career clusters and the preparation of career planning materials.

Career Guidance & Counseling	As defined in the School-to-Work Act, the term *"career guidance and counseling"* means, programs that… A. Pertain to the body of subject matter and related techniques and methods to develop and individual's career awareness, career planning, career decision-making, placement skills, and knowledge and understanding of local, state, and national occupational, educational, and ongoing market needs, trends, and opportunities; B. Assist individuals in making and implementing informed educational and occupational choices; and C. Help students develop career options with attention to surmounting gender, race, ethnic, disability, language or socioeconomic impediments to career options and encouraging careers in nontraditional employment.
Career Pathway	As defined in the Act, the term *"career major"* means "a coherent sequence of courses or field of study that prepares a student for a first job and that… A. Integrates academic and occupational learning, integrates school-based and work-based learning, and establishes linkages between secondary schools and postsecondary institutions; B. Prepares the student for employment in a broad occupational cluster; C. Typically includes at least 2 years of secondary education and at least 1 or 2 years of postsecondary education; D. Provides students, to the extent practicable, with strong experience in and understanding of all aspects of the industry that the student is planning to enter; E. Results in the award of a high school diploma or its equivalent; a certificate or diploma or its equivalent; a certificate or diploma recognizing successful completion of 1 or 2 years of postsecondary education (if appropriate); and a skill certificate; and F. May lead to further education and training, such as entry into a registered apprenticeship program, or to admission to a 2- or 4-year college or university.
Contextual Learning	*Contextual* knowledge is learning that occurs in close relationship with actual experience. Contextual learning enables students to test academic theories via tangible, real world applications. Stressing the development of "authentic" problem-solving skills, contextual learning is designed to blend teaching methods, content, situation, and timing.
Curriculum Alignment	*Curriculum alignment* occurs when academic and related or parallel vocational curricula are linked so that course content and instruction dovetail across and/or within subject areas.
Integrated Curriculum	*Integrated curriculum* occurs when academic and occupational or career subject matter—normally offered in separate courses—are taught in a manner that emphasizes relationships among the disciplines. Integrated curriculum may take many forms, ranging from the simple introduction of academics into traditional occupational courses to comprehensive programs that organize all instruction around career major themes.

Internships (Student)	*Student internships* are situations where students work for an employer for a minimum of 80 hours to learn about a particular industry or occupation. Students' workplace activities may include special projects, a sample of tasks form different jobs, or tasks from a single occupation. These may or may not include financial compensation.
Internships (Teacher)	*Teacher internships* or *externships* are worksite experiences of at least two weeks in duration. During this time, teachers may work at a particular job at the firm to learn specific skills or rotate throughout the firm to learn all aspects of the industry in which they are employed.
Job Shadowing	*Job shadowing* is typically a part of career exploration activities in late middle and early high school. A student follows an employee at a firm for one or more days to learn about a particular occupation or industry. Job shadowing can help students explore a range of career objectives and select a career major for the latter part of high school.
Learning Objectives, Performance Measures, and Performance Standards	Educators sometimes develop performance measurement systems to assess student achievement, monitor school progress, and support program improvement. The terms *learning objectives, performance measures, and performance standards* are used to define each part of the three-part process of establishing a performance measurement system. The process begins with identifying learning objectives for students or other program participants. After identifying these objectives, it is then necessary to decide how to measure their attainment. After developing appropriate performance measures, standards must then be set to represent the level of performance that is desired.
Mentor	1. A *School Site Mentor* is defined in the Act as a professional employed at a school who is designated as the advocate for a particular student, and who works in consultation with classroom teachers, counselors, related service personnel, and the employer to design and monitor the progress of the student. 2. A *Workplace Mentor* is defined in the Act as an employee or other individual, approved by the employer at a workplace, who possesses the required skills and knowledge, and who instructs the student, critiques the performance of the student, challenges the student to perform well, and works in consultation with classroom teachers and the employer.
Mentorship	A *mentorship* is a workbased learning experience that requires a minimum of 36 hours of training on part of the student. Students will work with a *mentor* who possesses the skills and knowledge to be mastered by the student and who instructs the student.

Secretary's Commission on Achieving Necessary Skills (SCANS) **Skills are listed in the appendix**	The *Secretary's Commission on Achieving Necessary Skills (SCANS)* was formed to examine the demands of the workplace and to determine whether the current and future workforce is capable of meeting those demands. The Commission was directed to: *1. Define the skills needed for employment;* *2. Propose acceptable levels in those skills;* *3. Suggest effective ways to assess proficiency;* *4. Develop a strategy to disseminate the findings to the nation's schools, businesses, and homes.*
Skill Standard	A *skill standard* specifies the knowledge and competencies required to perform successfully in the workplace. Standards are being developed along a skill continuum ranging from general work readiness skills and core skills for an industry, to specific occupational skills. Standards may cover basic and advanced academic competencies, employability competencies, and technical competencies. Development of these standards is tied to efforts to certify students' and workers' skills.
Tech Prep	*TECHnical PREParation* is the name given to strategies used to develop programs that offer at least four years of sequential course work at the secondary and postsecondary levels to prepare students for technical careers. Planned sequences of courses typically begin in ninth grade and result in an award of an associate's degree or certificate after two years of postsecondary training. Other Tech Prep combinations are also available, depending on local consortium arrangements. Tech Prep is designed to build student competency in academic subjects and to provide broad technical preparation in a career area. Course work integrates academic and vocational technical curriculum and may provide opportunities for dual enrollment in academic and vocational technical courses at secondary and postsecondary institutions.
Workbased Learning	*Workbased learning* experiences are activities at the high school level that involve actual work experience or connect classroom learning to work. They include experiences such as job shadowing, internships, cooperative education, mentorships, and registered apprenticeships.

1. **Academic performance standards** - consist of selected target knowledge or behaviors which students should be expected to perform prior to successfully completing an educational program.

2. **Competency** - is learned behavior which can be repeated to predetermined standard.

3. **Content standards** - spell out the subject-specific knowledge and skills that schools are expected to teach and students are expected to learn. Standards-setters have adopted the shorthand phraseology "what students should know and be able to do."

4. **Performance objective** - is a statement of what the student must do in observable and measurable terms.

5. **Rubrics** - are scoring devices (or tools) which are designed to assist in the process of clarifying and communicating expectation. Rubrics are expectations or grading grids which contain specific information about what is expected of students for every performance standard.

6. **Benchmarks** - agreed-upon developmental mileposts.

7. **Block-scheduling** - extended class periods at the secondary school level; intended to allow for curricular coordination or integration of compatible subject areas.

8. **Concept** - a mental construct that frames a set of examples sharing common attributes; high-level concepts are timeless, universal, abstract, and broad. Examples: Cycles, Diversity, Interdependence.

9. **Cooperative learning** - a teaching strategy that groups students in pairs or teams to problem solve, discover, and discuss ideas or investigate topics of interest.

10. **Curriculum** - the planned curriculum is an educational response to the needs of society and the individual and requires that the learner construct knowledge, attitudes, values, and skills through a complex interplay of mind, materials, and social interactions.

11. **Multidisciplinary** - a variety of disciplines coordinated to a topic of study; lacking a conceptual focus.

12. **Objectives** - Specific statements of what you want students to know; specific content of skill focus; measurable, usually by paper-and-pencil test.

13. **Outcomes** - Broad statements of what you want students to know and be able to do as a result of teaching/learning.

14. **Performance assessment** - a complex demonstration of content knowledge and performance assessed according to a standard and set of criteria; shows what students know and can do.

15. **Portfolio** - a chosen collection of student work and self-assessment that is used to showcase excellence or to demonstrate progress on a developmental performance.

16. **Standard** - an agreed-upon definition of quality performance.

17. **Integrated learning** - the blending of educational disciplines that are typically taught independently of one another. Involves curricula that is thematic, coordinated, and/or project-based. The objective is to increase students' applied knowledge of traditional subjects by organizing learning around broad, interdisciplinary questions. For example, a health occupations program's unit on infections might coordinate math, science, English, and health lessons and incorporate examples from the workplace.